ABSTRACT

Title of Document: THE RELATIONS AMONG CHILDCARE PROVIDER EDUCATION, NEIGHBORHOOD POVERTY, AND THE QUALITY OF CHILDCARE CLASSROOMS.

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The current study examined contextual influences on the quality of the childcare classroom. Previous research has examined how direct influences, such as childcare provider education, impact childcare quality, but to date, no research has examined how these direct influences interact with distal features, such as neighborhood poverty. Given the large number of children enrolled in childcare and the evidence that high quality childcare benefits children, it is important to identify what contributes to classroom quality. Using hierarchical linear modeling, this study examined (1) if childcare quality varies across neighborhoods, (2) if childcare provider education and (3) neighborhood poverty individually impact classroom quality, and (4) if the impact of childcare provider education on classroom quality varies as a function of the neighborhood. Data collected from the United Way of Southeastern Pennsylvania's Early to Learn project was used in combination with

poverty data derived from the 2000 U.S. Census. Results of the present study were that childcare quality did vary across neighborhoods, but that childcare provider education had no direct impact on classroom quality. However, neighborhood poverty was positively associated with classroom quality. Additionally, there was no differential impact of childcare provider education on quality in the context of the neighborhood. Although these findings may seem to suggest that childcare provider education does not matter, further analyses reveal that higher education was positively related to structural features of the classroom, such as group size and staff: child ratios. Additionally, providers with Associate's degrees and Child Development Associates had the highest quality classrooms, higher than those with a Bachelor's degree and with High School education. More research is needed to fully understand the impact of the childcare provider in the classroom. The findings that classrooms in higher poverty had higher quality classrooms, in addition to the lack of findings regarding childcare provider education, have major implications for future research and policies aimed at improving childcare quality.

THE RELATIONS AMONG CHILDCARE PROVIDER EDUCATION, NEIGHBORHOOD POVERTY, AND THE QUALITY OF CHILDCARE CLASSROOMS.

By

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2008

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Dedication

I dedicate this dissertation to my family, without whom, this achievement would not have happened. Thanks to all my siblings for keeping me balanced. From book club, to football, softball, tailgates, and trips, without you I wouldn't have made it through. To Mom and Dad, you'll never know how much your support has mattered over the years. You've shown me unconditional love and your support and faith in me has kept me going when I thought I'd never finish. You've pushed me to be who I am today and shown me how much I can achieve with hard work, dedication, laughs, love, and toenail Tuesdays! Jason, you've stood beside me since the moment I met you and never doubted me. Your love has calmed me down, cheered me up, and shown me how far I can go. I can't thank you enough for your support, patience, and unconditional love. This accomplishment belongs to all of you.

Acknowledgements

I would like to take this opportunity to thank the people who have helped me get to where I am today. I must first thank my mentor and advisor, Dr. Brenda Jones Harden. Brenda, you know that this has been "hard work," but you've shown me how rewarding hard work can be. Your commitment to your students, and your passion for improving children's lives, has been an inspiration to me. You've challenged me to be better in everything I do, and to never stop pushing myself. I will take the skills and lessons I learned from you into my career and also in my daily life. I will never be able to say it enough, but thank you for making me a better student, writer, researcher, and person.

My sincere thanks go to my committee, Dr. Ann Battle, Dr. Elisa Klein, Dr. Joan Lieber, and Dr. Christy Tirrell-Corbin. All of your support, feedback, and insight have made this dissertation better than I believed it could be. Thank you especially for your time and wisdom. It has been a privilege to learn from you all and I will never forget your support from day one in ECE meetings, lectures, and teaching seminars. Each of you has contributed to my time here at The University of Maryland in so many ways and made it a truly enriched experience.

I would not have gotten this far without the help of my friend, colleague, and advisor Dr. Elizabeth Jaeger. Lyz, it seems like yesterday we began this journey. You've seen me "grow up" as a student. Thank you for the opportunity to work for Early to Learn and for allowing me to use the data. My time working on the project and with you at Saint Joseph's taught me so much I'm sure I'll never fully understand just how much you've changed my life. Thank you for your feedback and being my

"sounding board" throughout the years. I see in you a drive to improve the quality of care for all children and a love of research. I only hope that I can model that in my career.

I cannot forget the help of the students here at the University of Maryland who helped me through countless edits, revisions, and with my statistics. Thank you Jennifer Koran for your help with HLM. Without your patience and knowledge I would have been stuck. I cannot thank you enough for the time and effort you gave me while working on your own dissertation. Jess, T'Pring, Dale, Heather, and Allison, from our first HAPPI and ECE meetings, you have been nothing but supportive. Your friendship and help has meant so much to me. You are all great scholars and people and I am lucky to call you friends. The students in this department have been pivotal to my success here, thank you all.

Finally, I must thank God for the strength and gifts that have gotten me here today. Without His love, none of this would be possible.

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Chapter I: Introduction

In the last few decades, the number of children who regularly experience childcare before entering school has increased dramatically. By the time children reach kindergarten, four out of five have been in some type of regular non-parental care (West, Denton, & Germino-Hausken, 2000). The impact of the childcare experience on child development has been studied at length. Scholars have provided extensive literature that documents the benefits of a high quality childcare environment for child development in all domains (Burchinal, Cryer, Clifford & Howes, 2002; NICHD ECCRN, 1996; 2002; Phillips & Howes, 1987). Additionally, researchers have found that childcare quality may be especially beneficial for at-risk children (Caughy, DiPietro, & Strobino, 1994; Connell & Prinz, 2002; Spieker, Nelson, Petras, Jolley & Barnard, 2003; Votruba-Drzal, Coley & Chase-Lansdale, 2004). Although the majority of children under age five attend childcare, the quality of care they receive is often non-optimal, and in some cases a danger to their health and safety (Cost, Quality and Outcomes Study Team, 1995; Peisner-Feinberg & Burchinal, 1997). Given the evidence that high quality care is beneficial to children, researchers and policy makers have examined the features of the early childhood classroom that might contribute to quality to inform the design of child care quality improvement initiatives.

As policy makers strive to find ways to improve the quality of care for children, in particular for those at risk, the distal and proximal influences on childcare need to be considered. For example, the larger context of the neighborhood, particularly neighborhood poverty, can affect the availability of resources to childcare centers and influence quality. Additionally, features of the classroom, such as childcare provider

education, can also impact the quality of care children receive. This has particular implications for programs such as Head Start, which serves primarily low-income populations and has established mandates for childcare provider education. Given recent policy changes in the early childhood education arena, such as Head Start mandates for childcare provider education (Administration of Children and Families Program Performance Standards, 1998), and a growing interest in the impact of neighborhood factors on child development, it is important to consider the combined influence of these variables on child care quality. Specifically, childcare provider education may be a critical ingredient of quality for childcare programs situated in impoverished neighborhood contexts. It is possible that providers with more education may provide protection against compromised neighborhood circumstances, such as poverty, because of the skills gained through formal education. There is a need to examine empirically whether childcare provider education may be more important for the childcare experiences of children living in impoverished neighborhoods.

Childcare Quality

Given that the majority of children in the U.S. experience some form of childcare prior to school entry, the impact of childcare quality on child development is important to consider. There is substantial evidence that childcare quality is related to developmental outcomes across domains, including language and cognitive development, and social emotional functioning. Children in high quality care score significantly better on cognitive tasks, such as problem solving (Burchinal, Cryer, Clifford, & Howes, 2002; NICHD, 2003; Peisner-Feinberg, Burchinal, Clifford, Culkin, Howes, Kagan, et al., 2001), and have better language skills (Burchinal, Roberts, Riggins, Zeisel, Neebe, &

Bryant, 2000; Love, Harrison, Sagi-Schwartz, van Ijzendoorn, Ross, Ugerer, et al., 2003; NICHD 2000a; 2004) than children who are not in high quality childcare settings. These gains in cognitive and language functioning have been shown to persist into elementary school. Children in high quality childcare have been shown to have better cognitive, attentional, and language outcomes in second grade, even after controlling for kindergarten and second grade classroom experiences (Peisner-Feinberg, et al., 2001).

There is less consistent evidence about the impact of childcare on social-emotional functioning, with some research findings that childcare enrollment has a negative impact on children's behavior and social skills (Belsky, Burchinal, McCartney, Vandell, Clarke-Stewart, Owen, et al., 2007; Deater-Deckard, Pinkerton, & Scarr, 1996). However, when the quality of the classroom is examined, researchers have typically found that children in high quality care have better peer relationships (Holloway & Reichhart-Erickson, 1989), are rated as more sociable (Holloway & Reichhart-Erickson, 1989), and have fewer behavior problems (Love, et. al, 2003) than children in low quality care. Given that a high quality environment can positively impact child development, it is important to study the factors which contribute to childcare quality.

Just as childcare in the United States is a complex issue, so is what constitutes child care quality. One of the many complexities is identifying what contributes to the quality of the classroom. Scholars typically examine structural variables, such as staff: child ratios and childcare provider education, and process variables, including interactions, discipline, and availability of materials. Often, studies of childcare entail the examination of features of the individual classroom that contribute to classroom quality and child development, such as childcare provider education (Burchinal, Cryer, Clifford

& Howes, 2002; Phillipsen, Burchinal, Howes & Cryer, 1997; Scarr, Eisenberg & Deater-Deckard, 1994; Zill, et al., 2001). These studies, particularly those examining childcare providers' education, do not fully explain what determines classroom quality. From an ecological perspective, factors outside of the individual classroom should also be considered. Burgeoning research on the impact of neighborhood poverty on child development allows for a new perspective for how neighborhood factors might also contribute to classroom quality. To date, the impact of childcare provider education on classroom quality has not been studied in combination with the influence of neighborhood poverty.

Childcare provider education has been studied as a way to explain classroom quality, and has also been examined as a means to improve quality. Despite much research on the impact of childcare provider education on classroom quality, ambiguity remains regarding how influential childcare provider education is for childcare quality. Scholars have reported a positive relationship between provider education and classroom quality (Phillipsen, Burchinal, Howes, & Cryer, 1997; Zill et. al., 2001). However, more recent analyses have yielded contrasting findings. Investigators recently reviewed seven large scale studies of childcare quality and revealed that the relationship between childcare provider education and classroom quality is not always supported (Early, Maxwell, Burchinal, Bender, Ebanks, Henry, et al., 2007). Additionally, in a closer examination of three of the large studies examined, the researchers found an interaction between site location and education. In some sites, education was positively related to quality and in others it was negatively related. Overall, however, no consistent relationship between education and quality was found. These conflicting findings may

reflect the lack of research that examines the larger contextual picture. For example, childcare providers in more impoverished neighborhoods may face a set of challenges which interact with their education level to impact quality.

The impact of childcare provider education on classroom quality has not been studied in relation to the neighborhood in which the center is located. There is growing evidence that neighborhood characteristics can have an impact on the availability and quality of resources in the neighborhood (Fuller & Liang, 1996; Small & Stark, 2005). In particular, neighborhood poverty has been found to affect the availability and quality of child care resources (Fuller, Kagan, Loeb, & Chang, 2004). Additionally, researchers have found a curvilinear relationship in the appropriateness of activities in childcare classrooms by neighborhood poverty. Classrooms serving low and high income families have been found to provide more developmentally appropriate activities than childcare centers serving middle-class families (Phillips, Voran, Kisker, Howes, Whitebook, 1994). Because childcare quality may be more important for low-income, at-risk children (Caughy, DiPietro, & Strobino, 1994; Connell & Prinz, 2002; Spieker, Nelson, Petras, Jolley & Barnard, 2003; Votruba-Drzal, Coley & Chase-Lansdale, 2004), it is important to examine the socio-economic context of the neighborhood.

Given the dearth of research on neighborhood influences on childcare, there is a need to investigate the contribution of the individual childcare provider to classroom quality within the context of the poverty of the neighborhood. For example, the neighborhood might interact with characteristics of the classroom, specifically the education of the childcare provider, to influence quality. A more educated childcare provider may use the limited resources in an impoverished neighborhood more

effectively than a less educated childcare provider in the same neighborhood. Thus, there is a need for research that considers these factors, childcare provider education and neighborhood poverty, in tandem.

To extend the small body of research on the influence of neighborhood factors on childcare quality, I examined childcare provider education and neighborhood poverty in relation to childcare quality. First, I investigated if childcare quality varies by neighborhood. Second, I addressed the conflicting literature regarding childcare provider education, as this study explored the impact of childcare provider education on classroom quality. In addition, I examined the effects of neighborhood poverty on classroom quality. Finally, I investigated whether the impact of childcare provider education on classroom quality varied as a function of the poverty of the neighborhood.

Theoretical/ Conceptual Framework

The current research is guided by Bronfenbrenner's ecological model of development (Bronfenbrenner & Morris, 1998). According to Bronfenbrenner's ecological model, people are situated in various ecological systems, all of which influence the individual in different ways. Proximal contexts of the microsystem, such as family and childcare, impact the child directly. Contexts in the exosystem affect the child indirectly, through the impact of neighborhood characteristics. Additionally, broader cultural contexts of the macrosystem, such as state and national policies and mass media, indirectly affect children's development. Individuals' perceptions of these contexts are also important for understanding how these systems interact to influence development. In this study, I am not examining the individual; rather the focus is on the classroom. In an ideal ecological study, the individual would be studied, as well as his/her perceptions of

his/her contextual experiences. Additionally, a longitudinal design would be used to determine the long term impact of these systems on individual development. However, Bronfenbrenner's theory can be a solid foundation for this study in that there are multiple ecologies that can impact the childcare classroom. Further, the current study can be used to inform future research designed to examine the contextual influences on childcare quality and associated child outcomes.

Bronfenbrenner's ecological model can be applied to an examination of how the setting of the childcare classroom (a microsystemic factor) is influenced by various contexts in the exosystem. Specifically, characteristics of the neighborhood can impact the classroom indirectly. For example, poverty in the neighborhood can affect the amount of resources available to the childcare facility, thus indirectly affecting the quality of the classroom. The burgeoning literature on neighborhood influences often identifies social capital and collective efficacy as characteristics of the neighborhood that impact individuals and institutions (e.g., childcare) in the community (Sampson, Morenoff, & Gannon-Rowley, 2002). Beyond financial resources, people in the community, such as childcare providers, neighbors, and those who work in community services such as libraries, can be valuable resources for childcare facilities. Importantly, the childcare classroom is directly impacted by the people who are in it, specifically the classroom childcare provider. The characteristics of the childcare provider (e.g., education level) can directly impact the quality of the classroom. All these factors, from an ecological perspective, ultimately have the potential to influence child development.

Theoretical notions from other disciplines (e.g., sociology, criminology) extend the conceptualizations of broader ecological influences on children's direct experiences

and related developmental outcomes. Specifically, social disorganization theory represents an important conceptual framework to understand the impact of neighborhood variables on child development and childcare quality. In social disorganization theory, there is an emphasis on the interconnectedness of formal and informal social networks. Formal social networks like schools and churches interact with more informal networks such as neighbors and community ties to influence development. According to Sampson (1992), neighborhood variables, such as neighborhood poverty and disadvantage, contribute to higher levels of social disorganization within the community by impacting both formal and informal networks.

Sampson (1992) has advanced social disorganization theory as a framework for understanding how families and children are embedded in and affected by social networks. The social disorganization in the neighborhood influences individuals, for example through parenting practices and social support, which in turn can impact child development. Sampson's articulation of this theory moves beyond seeing community variables as "exogenous" factors. Specifically, he asserts that a developmental perspective on social disorganization provides a more complete explanation of specific children's outcomes, in particular juvenile delinquency (Sampson, 1992). For example, it is not poverty alone that leads to juvenile delinquency, or other outcomes, but it may be how poverty affects parenting practices that in turn affects child development. He proposes that community variables and individual child development are integrated. Sampson (1992) further argues that community factors may facilitate or inhibit the creation of social capital (i.e., parenting); it is through this path that individuals are impacted by neighborhood variables.

Linking this argument to Bronfenbrenner's theory, the neighborhood can be viewed as part of both the micro- and exo-systems. Within the microsystem, a child's direct contact with the neighborhood, such as playing in a dilapidated park, might affect him directly through the amount of physical activity he experiences or his exposure to dangerous equipment. The neighborhood can also indirectly affect a child, as Sampson (1992) proposes, through parenting. A parent in an impoverished neighborhood may choose to keep his/her child away from a dilapidated and dangerous park, thereby limiting the child's outdoor activity, but instead may set up indoor games to provide the child with a physical outlet. This would represent a more indirect influence of the neighborhood on the child, and be considered an exosystemic component.

In this study, Bronfenbrenner's theory was adapted such that the unit of study is not an individual; rather the quality of the classroom is the focus. Within the microsystem of the classroom, the childcare provider would have a direct influence on the quality of the experience a child has. Additionally, exosystemic factors in the neighborhood may influence the quality of the classroom, for example through the availability of resources. Further, classroom quality may be indirectly affected by the neighborhood through the practices of childcare providers who work within these settings. Just as a parent may exhibit different childrearing practices dependent upon the neighborhood, a childcare provider may utilize distinct practices as a means to address the neighborhood factors that affect the children she teaches and the childcare environment in which she works. The educational level of childcare providers may be an individual characteristic that determines how they respond to the conditions of the neighborhood in which the childcare facility is situated.

For the current study, I drew from Bronfenbrenner's developmental and Sampson's sociological frameworks to examine contributors to the quality of childcare. As diagrammed in Figure 1, Sampson's concepts of social disorganization can be depicted within Bronfenbrenner's levels. For example, neighborhood poverty can be included as a characteristic of Bronfenbrenner's exosystem. Similarly, in Social Disorganization theory, neighborhood poverty is considered to have an indirect influence on individual outcomes. Figure 1 depicts how these frameworks guide the questions in the current study.

Contextual Influences on Childcare Quality: Childcare Providers and the Neighborhood

There are many factors documented by researchers that influence the quality of the early childhood classroom. For example, the impact of childcare provider characteristics on childcare environments has been widely studied. Researchers have examined childcare provider wages, experience, and psychological variables such as depression, although not to the same extent as other childcare provider characteristics (Kontos & Wilcox-Herzog, 2001; LoCasale-Crouch, Konold, Pianta, Howes, Burchinal, Bryant, et al., 2007; Pianta, Howes, Burchinal, Bryant, Clifford, Early, et al., 2005). A single study of childcare provider wages revealed that they are not always associated with classroom quality (Pianta, et al., 2005). Childcare provider experience has been associated with classroom quality in some studies, but other researchers have provided conflicting evidence (Kontos & Wilcox-Herzog, 2001). In a study which examined the impact of experience on classroom quality, investigators found that experience was related to classroom quality, however, the effect of experience was mediated by other characteristics of the childcare provider, such as depression (Pianta, et al., 2005). Other

researchers have shown that in low quality classrooms, experience is not associated with classroom quality (LoCasale-Crouch et al., 2007). However, in the highest quality classrooms, more experience was related to higher quality.

Most widely studied in the literature on childcare provider characteristics and childcare quality is the impact of childcare provider education. Specifically, childcare provider education is considered a structural indicator of classroom quality (i.e. regulatable characteristic). Early childhood childcare providers play a pivotal role in the quality of the classroom environment that they provide (Burchinal, Cryer, Clifford & Howes, 2002; Phillipsen, Burchinal, Howes & Cryer, 1997; Scarr, Eisenberg & Deater-Deckard, 1994; Zill et al., 2001). The specificity of childcare providers' education (i.e., specialization in child development, education, and related fields) may impact childcare quality, and in turn, children's developmental outcomes (Howes, Whitebrook, & Phillips, 1992). More educated childcare providers may have the skills and training necessary to have positive, sensitive and responsive interactions and provide opportunities for stimulation that are evident in high quality environments.

There is much conflicting literature regarding the impact of childcare provider education on classroom quality. Many researchers have found a positive relationship between childcare provider education and overall classroom quality (Burchinal, Cryer, Clifford & Howes, 2002; Phillipsen, Burchinal, Howes & Cryer, 1997; Scarr, Eisenberg & Deater-Deckard, 1994; Zill et al., 2001). Additionally, childcare providers with more education have also been found to be more sensitive and responsive, as well as more involved with students, than are childcare providers with less education (Howes, Whitebrook & Phillips, 1992; Arnett, 1989; Ruopp, Travers, Glanz & Coelen, 1979;

Wilcox-Herzog, 2002). In contrast, some researchers have found only small correlations between childcare provider education and classroom quality (Scarr, Eisenberg & Deater-Deckard, 1994) or no relationship at all (Early, Bryant, Pianta, Clifford, Burchinal, Ritchie et al., 2006; Roupp, Travers, Glanz, & Coelen, 1979). Investigators recently reviewed several major childcare studies and revealed that the relationship between childcare provider education and classroom quality is generally not supported (Early, Maxwell, Burchinal, Bender, Ebanks, Henry, et al., 2007). Examining the issue of childcare provider education from a broader, more contextual perspective may to some extent clarify the ambiguous findings in this area.

Investigating the effects of childcare provider education on the childcare classroom in combination with neighborhood factors may provide more refined evidence about the role of childcare provider education regarding childcare quality. There is growing research on the effects of the neighborhood on child development. Neighborhood factors can both positively and negatively affect development. Living in poverty has been related to adverse child outcomes, such as lower reading and math achievement (Kowaleski-Jones, Dunifon, & Ream, 2006; Morales & Guerra, 2006). In contrast, having a large proportion of affluent neighbors in the community can have a positive impact on cognitive development (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993). However, the pathway through which the neighborhood affects development is not clear. Beyond the critical influence of the family, the childcare environment may be one pathway through which the neighborhood affects the development of young children. Given the large number of children in childcare, it is important to examine the contribution of neighborhood factors to childcare.

Researchers have begun to examine how the neighborhood affects some aspects of childcare. A link has been found between neighborhood poverty and childcare availability, although the relationship is not always clear. Some researchers have found a curvilinear relationship between neighborhood poverty and childcare availability (Fuller & Liang, 1996); however, others have not documented that linkage. For example, Small and Stark (2005) found that availability and type of childcare varied as a function of poverty. In impoverished neighborhoods, there were more publicly funded childcare facilities than private facilities, thus creating more childcare availability in these neighborhoods than in middle class neighborhoods. Although availability of childcare does not give insight into the quality of care, this line of inquiry establishes a connection between neighborhood factors and childcare that potentially can be extended into the quality arena.

Further, scholars have begun to examine how the neighborhood affects the quality of childcare. Some studies have indicated that regarding structural indices of childcare quality, such as staff: child ratios, there are no differences between childcare facilities in low- and high-income neighborhoods (Fuller & Laing, 1996; Phillips, Voran, Kisker, Howes, Whitebook, 1994). This may be due to the existence of state regulations of these indices of quality and public funding of childcare in low-income neighborhoods. Other researchers have found that childcare quality is lowest in high poverty areas (Helburn, 1995; Loeb, Fuller, Kagan, & Carrol, 2004). Still others have documented, similar to the curvilinear relationship found in childcare availability, that childcare quality is higher in low and high SES neighborhoods than in middle class neighborhoods (Fuller, et al., 2004). Further, the proportion of childcare providers with specialized training is lower in

middle class neighborhoods than in lower and upper class neighborhoods (Phillips, Voran, Kisker, Howes, Whitebook, 1994). As is evident, there is a weak and inconsistent evidentiary base regarding the influence of neighborhood factors on childcare quality. Further research is needed to examine this phenomenon, particularly regarding the influence of neighborhood poverty in combination with more proximal mechanisms of childcare quality, such as childcare provider education.

Pathways to Quality: Compensatory Influence of Childcare Provider Education on the Quality of Childcare in Impoverished Neighborhoods

Drawing from the research that shows neighborhood poverty can impact child development, this study focused on a possible pathway through which poverty can affect children: childcare quality. Building on the research that documents how parent characteristics can mediate the impact of poverty on parenting practices, it is important to address how the characteristics of the childcare provider can be examined in the context of child care quality and neighborhood poverty. Researchers have shown that living in poverty can negatively affect parenting practices, such as parenting warmth (Klebanov, Brooks-Gunn, & Duncan, 1994). It is suggested that the stresses of living in an impoverished environment with fewer resources may compromise a parent's ability to effectively parent. However, researchers have also found a positive relationship between parents' education levels and parental warmth even when considering neighborhood characteristics (Pinderhughes, Nix, Foster, Jones, & The Conduct Problems Prevention Research Group, 2001).

In addition to poverty affecting children through the family, neighborhood poverty may also impact children through the resources and social capital (i.e., child care

quality) that childcare provides to families and children. As parents may mediate the effect of neighborhood poverty on children's outcomes, childcare providers may also mediate this effect by contributing to the quality of the classroom environment. It is possible that childcare providers working in an impoverished neighborhood would feel high levels of stress which may compromise their ability to teach effectively. Research on childcare provider stress identifies poor working conditions as a significant contributor to stress levels for childcare providers (Kyriacou, 2001). A lack of resources in impoverished schools contributes to poor working conditions; teaching in such an environment may impact a childcare provider's stress level. Importantly, how childcare providers perceive stress has been found to be related to their level of education. Childcare providers with more education have been shown to perceive less job stress than childcare providers who have less education (Trendall, 1989). Building on this research, it is possible that childcare providers' education can also impact their ability to teach effectively, despite the stressors of teaching in an impoverished environment, and thus their capacity to provide a higher quality environment for children.

Although the literature is limited, it seems that the education childcare providers have can equip them with the skills to effectively teach, even when they work in an impoverished environment. For example, a childcare provider with more education may have the knowledge and skills to create physical activities for her students in the confines of the classroom, instead of taking them to a playground in the neighborhood which might be dangerous. This focus on childcare provider education is also relevant because the education and training of childcare providers is an area in which interventions can be established, and many initiatives are currently underway across the nation (Fiene, 2002;

Ontai, Hinrichs, Beard, & Wilcox, 2002; U.S. Department of Health and Human Services, Child Care Bureau, 2004). Given the potential for childcare provider education to mediate the impact of poverty on children's educational experiences, this study examined the role of childcare provider education in the quality of childcare offered in settings situated in impoverished neighborhoods.

Study Rationale and Overview

Many gaps remain in the literature when researching both childcare provider education and neighborhood effects on classroom quality. In this study, I addressed both these questions, as well as examined the effect of childcare provider education in the context of neighborhood poverty on childcare quality. The study of neighborhood effects on childcare quality is a relatively new empirical endeavor. No research to date examines these variables in combination with one another.

The purpose of this study was to examine how contextual factors, specifically childcare provider education and neighborhood poverty, influenced childcare classroom quality in center-based settings. This study used data collected as part of the United Way of South Eastern Pennsylvania's Early 2 Learn project as well as data from the U.S. Census Bureau. Classroom quality and childcare provider education data came from the Early 2 Learn project, and neighborhood data that correspond with childcare data were derived from the U.S. Census summary file 3.

Data collected from the Early 2 Learn project included information from classroom observations, childcare provider surveys, and center characteristics from many early care and education programs in the Philadelphia area. The sample included childcare classrooms from neighborhoods representing a wide socioeconomic range, but

the centers served primarily low-income, largely minority populations. Programs in the study identified themselves as preschools, early learning centers, day care, childcare centers, and learning centers. All the programs were center-based programs. To provide further context, it is important to note that Pennsylvania requirements for childcare provider education vary depending on the type of program serving young children. All kindergarten and state financed pre-kindergarten programs require that all providers have a BA or higher, however, there is no requirement for childcare providers (Barnett, 2003). The childcare centers included in this study were not state-financed and were not kindergarten programs, thus, no formal state requirements were in place regarding the education level of the providers in these particular classrooms.

This research forged new ground in the connection between poverty and childcare quality, thus minimal data existed with which to build true hypotheses. Additionally, although I designed this study to address the conflict in the literature surrounding level of education and classroom quality, a true prediction was difficult to determine given the inconsistency in the literature. Therefore, this was an exploratory study in which four research questions were investigated:

(1) Does childcare quality vary across neighborhoods?

(2) Does childcare provider education impact classroom quality?

(3) Does neighborhood poverty impact classroom quality?

(4) Does the impact of childcare provider education on classroom quality vary as a function of neighborhood poverty?

Limitations

It is important to address specific limitations of the current study. First, this study used secondary data. Although this provided a larger sample size which was needed for more sophisticated statistical analyses, variables of interest were constrained by what was available in the data set. For example, information on specialization of education was lacking in this data set, as many participants did not identify any specialization. Additionally, definition of "neighborhood" was restricted by census delineations and thus may not be what is perceived to be the "neighborhood" by those working in that area. Also, although I had a measure of neighborhood poverty, I did not have information on the children in each center. Thus, I could not assume that the children enrolled in these centers came from the same neighborhoods where the childcare facility was located. Despite these limitations, this study was the first to examine how childcare provider education interacts with poverty to influence classroom quality. Results from this study can provide valuable information on the important contributors to classroom quality as well as provide considerations for future research and implications for policies related to classroom quality.

Definition of Terms

Education: In the current study, level of education was defined as completion of a formal education program such as a high school diploma or associates degree. This term also included the Child Development Associates (CDA) credential. The CDA is not the same as a formal higher educational program or degree, yet it is included in many studies of provider education and was included in the present study based on this earlier work (Burchinal, Cryer, Clifford, & Howes, 2002). Herein, the term education does not specify

a specific field of study, such as early childhood education. Elsewhere in the literature review, education is used when that term was identified by the original authors of the study.

Childcare Quality: Researchers use many definitions for childcare quality. In this study, childcare quality included the overall atmosphere of the classroom, including materials, activities, relationships between staff and children, and peer to peer interactions. A more detailed account of the complexities involved in defining childcare quality is found in Chapter 2. Additionally, the measurement technique used to quantify childcare quality is described in Chapter 3. Elsewhere in the literature review, childcare quality is used when that term was identified by the original authors of the study.

Neighborhood: In the current study, neighborhood was defined by the census block group in which the center is located. Elsewhere in the literature review, neighborhood was used when that term was identified by the original authors of the study. The term neighborhood in these studies ranges in its definition, including zip codes, census tracks, block groups, and self-identified neighborhood.

Childcare Provider: Childcare providers in this specific sample are defined as the self-identified (through the childcare provider survey and by the director of the center during classroom observations) "lead teacher" of the classroom, not an aide or assistant in the classroom.

Early Education and Care and Childcare Programs: These are center-based programs which provide care to children when parents are not available to care for the child at that time. These centers can range in the level of "academic" instruction and quality of care.

This term applies to various types of programs, such as preschools, early learning centers, day care, childcare centers, and learning centers.

Conclusion

The overall goal of this study was to examine the impact of contextual factors on childcare classroom quality. Due to the importance of childcare quality for child outcomes, understanding what contributes to classroom quality is imperative. To date, most research has examined how individual features of the classroom, such as childcare provider education, impact classroom quality. Mixed results have emanated from this research. More recently, researchers have begun to look at how the neighborhood contributes to particular aspects of childcare. However, this literature is sparse and has yielded inconsistent findings. In the current project, I provided further clarification regarding the conflicting evidence on childcare provider education, and explored the effects of childcare provider education in combination with neighborhood poverty. This research broadened the literature on childcare quality through an examination of both larger ecological and more direct influences on the childcare environment.

Chapter II: Literature Review

Literature Search

Electronic searches were conducted in order to obtain literature on childcare effects on child outcomes, childcare provider characteristics, particularly education, and neighborhood characteristics, particularly poverty. The electronic databases used included, Academic Search Premier, EconLit, ERIC, Family and Society Studies Worldwide, MEDLINE, PsycINFO, and SocINDEX. The relevant key words used in literature searches included 'childcare,' 'day care,' 'preschool,' 'early childhood education,' 'quality,' 'child development,' 'child outcomes,' 'childcare provider,' 'education,' 'teacher education,' 'teacher characteristics,' 'neighborhood,' 'community,' 'poverty,' 'resources,' 'availability,' 'neighborhood capital,' 'neighborhood environment,' and 'services.' Such a broad range of databases and search terms were necessary to fully research the differing topics of study, as well as to provide supplemental information linking the two main areas of interest: childcare provider education and quality, and neighborhood poverty.

Of the articles returned from these searches and reviewed, 162 articles were included as they pertained to the effects of childcare on child development, childcare provider education levels and classroom quality, neighborhood poverty and child outcomes, and finally neighborhood poverty, resources, capital, and the availability and quality of neighborhood resources. Results from these searches revealed a conflict in the empirical literature regarding the impact of education on classroom quality. Additionally, scarce literature exists which directly links childcare quality to neighborhood poverty. Although researchers have found that quality varies across neighborhoods and poverty

levels (Helburn, 1995; Fuller, et al., 2004; Loeb, Fuller, Kagan, & Carrol, 2004), no research exists which shows how childcare quality is affected by neighborhood poverty. A gap remains in the literature as to the mechanism through which poverty impacts quality.

In this chapter, I will explore contextual influences on the childcare environment. First, I will briefly discuss the "epidemiology" of childcare. Second, I will describe the underlying theory of this dissertation. Using Bronfenbrenner's ecological model of development as a framework, supplemented by Sampson's (1992) adaptation of Social Disorganization Theory, I will explore contextual factors that may contribute to childcare quality. I will define childcare quality, and address the impact of childcare quality on child development. Following that discussion, I will review the specific contexts that contribute to childcare quality, including childcare provider characteristics and neighborhood influences on the childcare environment. Finally, I will identify methodological issues in the study of childcare quality and outline directions for future research.

In the last three decades, there has been a dramatic increase of women, especially mothers of young children, in the workforce. In 1975, 39% of women with children under six years old were employed; by 2004 that number had increased dramatically, reaching 62% (Bureau of Labor Statistics, 2005). With more mothers in the work force, more children are in non-parental care in a variety of different settings, such as center-based care (e.g. Childcare center, Head Start, nursery schools, preschools), relative care (i.e., care in or outside of the child's home by a relative other than the child's parents), and family childcare (i.e., care by a non-relative in the provider's home). In 2002,

approximately 11.2 million (63%) children under age five were in some form of childcare (Overturf Johnson, 2005). Further, the 2001 National Household Education Survey reported that 56.4% of children aged three to five were enrolled in center-based care (U.S. Department of Education, National Center for Education Statistics: NCES, 2002); this percentage does not include children between three and five who are in some other form of non-parental care. The National Survey of America's Families found that almost 73% of children who had employed mothers were regularly enrolled in childcare (Cappizzano & Adams, 2004). For younger children, it is estimated that 50% of infants age nine months are in non-parental care as their primary care arrangement (U.S. Department of Education, NCES, 2002).

With so many children experiencing childcare, and given the wealth of information relating the quality of care to child development, it is important to study the contextual factors that impact the quality of the classroom. Characteristics of the classroom, such as the education of the childcare provider in the classroom, have been studied more frequently. However, other contextual factors (e.g., characteristics of the neighborhood) have received little or no attention in the literature. It is critical to examine the impact of classroom childcare providers' education on childcare quality, in the context of neighborhood factors, such as poverty.

Childcare Quality

Defining what constitutes high quality childcare is a complex issue. Layzer and Goodson broadly define it as "aspects of the environment and children's experiences that nurture child development" (2006, p. 558). The childcare literature typically examines two types of quality: structural and process. Structural quality is related to characteristics

of a childcare setting that are often “regulatable”, such as staff/child ratios, group size, and childcare provider training and level of education (Howes, Whitebrook, & Phillips, 1992; Phillips & Howes, 1987). States vary greatly in how they regulate structural characteristics such as group sizes and ratios. For example, state regulated staff: child ratios for 27 month old children vary from 1:4 to 1:12 depending on the state (LeMoine & Morgan, 2004). Similarly, limits on group sizes for children in childcare vary across states; not all states have a regulated group size limit.

Researchers show that structural measures relate to the quality of the classroom and also to child outcomes. In both infant/toddler and preschool classrooms, better staff: child ratios are predictive of higher classroom quality (Goelman, Forer, Kershaw, Doherty, Lero, & LeGrange, 2006). It has also been shown that small group sizes can have positive impacts on children’s cognitive development (NICHD ECCRN, 2000b). Additionally, some researchers suggest that childcare provider training and education are related to global classroom quality (Burchinal, Cryer, Clifford & Howes, 2002; Phillipsen, Burchinal, Howes & Cryer, 1997; Scarr, Eisenberg & Deater-Deckard, 1994; Zill et al., 2001). Typically, childcare providers with more education have higher quality classrooms. Although more recently there has been some debate in the literature surrounding this issue, the importance of childcare provider education, a structural measure of quality, and its relation to classroom quality cannot be overlooked.

Process quality includes less tangible characteristics of the childcare setting. It generally refers to the experiences children have with childcare providers, peers, and the materials available to them in the classroom, such as caregiver-child interactions, supervision, and discipline practices (Vandell, 2004). High quality classrooms protect

children's physical and psychological health and safety. Specifically, higher quality childcare programs are characterized by positive and supportive caregiver-child interactions and opportunities for cognitive stimulation (Phillips, McCartney & Scarr, 1987; Vandell, 2004). There is a dearth of research that looks at process quality in the classroom in and of itself. Recently scholars have reviewed the childcare literature and have pointed to methodological issues surrounding the definition of high quality care. First, what is considered "quality" is often influenced by research linking "quality" to outcomes (Layzer & Goodson, 2006). Similarly, there can be difficulty separating quality measures and outcome measures (Zaslow, Halle, Martin, Cabrera, Calkins, Pitzer, et al., 2006). These challenges make studying process quality difficult. Much of the available research utilizes the use of developmentally appropriate practices in their operationalization of process quality.

The National Association for the Education of Young Children (NAEYC) has developed guidelines for developmentally appropriate practices that speak to these process factors (Bredekamp & Copple, 1997). High quality environments provide positive interactions between a limited number of consistent caregivers and children, as well as providing many opportunities for children to experience positive social relationships with peers (NAEYC, 1997). Classrooms exhibiting developmentally appropriate practices (DAP) are generally individualized to meet each child's developmental needs. Childcare providers in DAP classrooms facilitate the process of learning, not just the product, and are supportive of children's needs and abilities (Huffman & Speer, 2000). Developmentally appropriate practices are anchored in Piagetian, Vygotskian, and constructivist theories in which children are active

participants and caregivers provide scaffolding to support each child's individual experiences and developmental abilities (Huffman & Speer, 2000; Stipek, 2004). Most activities are child initiated and not childcare provider directed.

Typically, process quality is assessed through observational measures such as the Early Childhood Environment Rating Scale-Revised (ECERS-R; Harms, Clifford & Cryer, 1998) and the Observational Record of the Caregiving Environment (ORCE; NICHD ECCRN, 1996). The ECERS-R measures the global quality of the classroom including process features such as interactions between childcare providers and children, interactions between peers, and opportunities for cognitive stimulation. The ORCE assesses process quality through time-sampled counts of caregiver and peer interactions and child activities in the classroom. Researchers have shown that measures of process quality have been related to positive child outcomes, such as better language, cognitive and social skills (Peisner-Feinberg & Burchinal, 1997; Love et al., 2003). A link has also been established between some structural characteristics and indicators of process quality. When staff: child ratios are lower, caregivers are more stimulating and responsive to children's needs (NICHD ECCRN, 1996). Additionally, childcare providers have been found to be more responsive and less controlling when group sizes are small (NICHD ECCRN 1996; 2000a).

The quality of the early childhood classroom is an important factor to consider in child development, considering the number of children in non-parental care today. Although structural and process qualities are different, they both contribute to the environment of the classroom, and in turn they can impact child development. Overall,

the research supports the notion that structural and process qualities are related to child outcomes.

Childcare Quality and Child Outcomes

The context of childcare may affect children across many developmental domains, including physical health, language and cognitive development, and socio-emotional functioning. Most researchers tend to focus on one specific area of child development and not the whole child (Zigler, 1984; Zigler & Styfco, 2004). Outcomes in one area of development are bound to influence outcomes in another. Although children's cognitive and language abilities are important for school readiness, their social and emotional skills are equally important, and all these domains are intertwined to make up the whole child (Raver & Zigler, 1997). Despite the approach of most child care researchers to focus on singular areas of child development, it is important to keep the overall development of the child in mind. Consistent with the research, the following paragraphs address the impact of child care on specific domains of development.

Physical Health

Although there are minimal data on the impact of childcare *quality* on health outcomes, the relation between childcare *enrollment* and physical health has been examined extensively. Children in childcare are reported to have more respiratory infections than children not enrolled in childcare (Schwartz & Giebink, 1994; Nafstad, Hagan, Oie, Magnus & Jaakkola, 1999). Schwartz and Giebink (1994) also found that children under 2 years of age who attend childcare are more likely than children cared for at home to develop otitis media, commonly known as middle ear infections. Some researchers have shown a link between otitis media and language problems in children,

although this research is not specifically related to childcare (McCormick, Baldwin, Klecan-Aker, Swank & Johnson, 2001; Klausen, Moller, Holmefjord, Reisaeter & Absjornsen, 2000). In a nationally representative sample of over 800 children in various types of childcare settings, children in center-based childcare were 2 to 3 times more likely than children not in childcare to use health care services, such as emergency services, office visits and pharmacy services (Silverstein, Sales, & Koepsell, 2003). This may be because children in childcare contract more illnesses, but may also be explained by childcare regulations that require children who are sick to produce a doctor's note to return to care.

In contrast, other researchers suggest a more complex picture regarding the relation between childcare enrollment and physical health. In a large scale study that tracked the occurrence of the common cold in children, enrollment in a large childcare setting (i.e., more than six unrelated children) was a protective factor against colds in the early school years, possibly because of acquired immunity (Ball, Holberg, Aldous, Martinez & Wright, 2002). However, that protection faded after children reached age 13. Similarly, the NICHD study of Early Child Care found that children in childcare experienced more bouts of illnesses in the first 2 years of life than children who were exclusively at home but the differences disappeared by age 3 (NICHD ECCRN, 2001b). These early illnesses appear to have little effect on children's development such as language or cognition. However, children with more illnesses were described by their mothers as having more behavior problems, but this was not reported by caregivers in the childcare settings (NICHD ECCRN, 2001b). A positive outcome associated with childcare use and health was found in the Head Start population. Children enrolled in

Head Start were more likely to be up to date on their immunizations and were reported to have better health habits (e.g., hand washing) than non Head Start participants (Abbott-Schim, Lambert & McCarty, 2003).

In sum, the evidence suggests that children who are enrolled in childcare settings may have a greater incidence of illnesses, such as upper respiratory and ear infections, than children who are not in childcare, or who are in smaller group settings. It is commonly believed that children in childcare are exposed to more contagious and infectious illnesses in the care setting, yet there is some evidence that this early exposure does not necessarily place children at risk for future illnesses. Finally, there is little evidence that shows that the increased level of illnesses found in children in childcare settings impacts later child development or school readiness.

Cognitive and Academic Functioning

Many links have been found between childcare participation and cognitive development, particularly when children are in high quality childcare. Researchers from the NICHD study of Early Child Care (2003) found that high quality childcare impacted cognitive development even when controlling for family factors. When caregivers provided more language stimulation and focused more on teaching academic skills, children did significantly better on cognitive tests, such as problem solving and letter-word recognition. Other findings from the NICHD study of Early Child Care show that the average quality of care, and increases over time in quality of care, are predictive of greater cognitive performance (Tran & Weinraub, 2006). High quality childcare has even been associated with better cognitive outcomes later in life. Children who had high quality childcare showed higher math, cognitive and attentional abilities in second grade

even after accounting for kindergarten and second grade classroom experiences (Peisner-Feinberg, Burchinal, Clifford, Culkin, Howes, Kagan & Yazejian, 2001).

Cognitive gains have also been documented for very young children in high quality settings. The Early Head Start Study compared infants and toddlers in 17 Early Head Start (EHS) centers throughout the country to EHS eligible families who did not receive services. They found that higher quality care, as measured by the Infant/Toddler and Early Childhood Environment Rating Scales (ITERS and ECERS), was associated with positive gains in cognitive development (Love et al., 2003). Higher quality childcare programs, that had lower staff: child ratios and childcare providers with Bachelor's degrees in early childhood education, were linked to better caregiver-child interactions and cognitive competence in children (NICHD ECCRN, 1996; 2002; Burchinal, Cryer, Clifford & Howes, 2002).

There is a growing body of evidence that high quality childcare may be especially beneficial for children who are at-risk. Caughy, DiPietro and Strobino (1994) found that children from "impoverished homes" who had been in high quality childcare in the first 3 years of life scored better on math and word recognition than children from impoverished homes who did not receive childcare. Researchers from the Cost Quality and Outcomes Study also showed that childcare quality was associated with positive cognitive outcomes, especially for children at-risk for school failure (Peisner-Feinberg & Burchinal, 1997). In a smaller study of 79 African American children, 70% of whom were below the poverty level, similar results were found (Burchinal, Roberts, Nabors & Bryant, 1996). Childcare quality was related to cognitive development of infants at 12

months. In particular, process measures of quality, notably quality childcare provider-child interactions, were related to infants' cognitive development.

Thus, the preponderance of evidence indicates that quality of childcare is particularly important for children's cognitive and academic functioning. High quality childcare has been found to be especially beneficial for the cognitive development of children in at-risk environments. These cognitive gains have even been shown to persist into the later school years. Providing quality care may protect socioeconomically at-risk children from the environmental risk factors that adversely impact their cognitive and academic functioning.

Language Functioning

Related to cognition, language development has also been examined in the literature on childcare quality. For example, investigators from the NICHD study of early childcare examined children's language development through 54 months (NICHD ECCRN, 2000b; 2004). When children were 54 months old, a greater number of hours in care was associated with better language scores even when family factors were controlled (NICHD ECCRN, 2004). In particular, center-based care was associated with better language outcomes at age 3 than other types of childcare (NICHD ECCRN, 2000B). Further, they found that in younger ages (i.e., 15, 24 and 36 months), high quality care predicted better language outcomes. Quality of care may also have persistent effects on language development. Children in high quality childcare have been shown to have better language skills through the second grade, specifically receptive language, than children in low quality care (Peisner-Feinberg et al., 2001).

High quality childcare may be more influential regarding language for some children than for others. Specifically, researchers have found slightly different outcomes in a population of low-income African American children (Burchinal, Roberts, Nabors, & Bryant, 1996). Process quality was related to cognitive outcomes, but not language. However, they did find that a structural measure of quality, specifically child: staff ratio, was related to infants' communication skills. Infants who were in settings in which the ratio was 3:1 or better scored higher on communication outcomes than infants in settings with higher ratios, even after controlling for family factors. Results from the Early Head Start study showed that at-risk children in high quality care had more positive gains in language development than children in low quality care (Love, et al., 2003). Similarly, analysis of data from the Cost, Quality and Outcomes Study, the North Carolina Head Start Partnership study, and the Public Preschool Evaluation Project, revealed that children who had experienced high quality childcare had higher verbal scores than children who were in low quality care (Burchinal, Peisner-Feinberg, Bryant, & Clifford, 2000). Interestingly, these researchers found that although high quality care was related to better language outcomes for all children, it was especially beneficial for children of color.

Although the authors did not examine childcare quality specifically, Spieker, Nelson, Petras, Jolley & Barnard (2003) examined the impact of childcare on language within a very high risk population. In this sample of low-income mothers and their babies, childcare enrollment compensated for some of the adverse effects of an insecure attachment relationship (Spieker, et al, 2003). Insecurely attached children in center care had better language outcomes than insecure children cared for at home. It may be that

childcare can buffer some of the harmful effects of an insecure attachment relationship to mother, especially in a low income population.

A preponderance of evidence reveals that children's language development can be enhanced by enrollment in childcare, regardless of the quality of the care. Additionally, there is some evidence that childcare enrollment itself can buffer some of the negative effects of an insecure attachment relationship on language development, particularly for children in low-income samples. Further, scholars have provided a great deal of literature which documents that high quality childcare can improve both infants' and preschool children's language development. High quality childcare seems particularly beneficial for the language development of non-white children.

Socioemotional Development

There is inconsistent evidence about childcare's impact on social-emotional development in children. In a sample of European American children of mostly employed mothers, childcare quality was not related to social adjustment (Deater-Deckard, Pinkerton & Scarr, 1996). In fact, the home environment was a better predictor of a child's social adjustment. Regarding childcare quality, Holloway and Reichhart-Erickson (1989) examined the impact of both structural and process variables on the development of social competence. They found that children who experienced smaller class sizes and higher quality interactions with childcare providers had better peer to peer relationships, and were rated as more sociable. The EHS research and evaluation study team also found that children in high quality care showed improvements in socioemotional development and had fewer behavior problems than children in lower quality care (Love et al., 2003). Positive caregiver-child interactions also play a part in children's socioemotional

development. Quality childcare provider-child relationships in the context of a supportive emotional classroom environment have been associated with better peer to peer relationships in children (Howes, 1997).

In more at-risk populations, childcare enrollment seems to have a major impact on socioemotional development. Recently, researchers examining a low-income population showed that higher quality care was related to fewer internalizing behavior problems and fewer serious externalizing behavior problems bordering on the clinical range (Votruba-Drzal, Coley & Chase-Lansdale, 2004). In a sample of mother-child dyads that were eligible for Temporary Assistance For Needy Families (TANF), Loeb, Fuller, Kagan, and Carrol (2004) found that children who were in classrooms with positive childcare provider-child interactions exhibited fewer social-behavior problems than children who had less positive childcare provider-child interactions. In a small sample of low-income African American children, early entry in childcare was associated with higher social skills (Connell & Prinz, 2002). However, a greater number of hours per week in child care was related to lower social skills ratings by childcare providers. No level of quality was assessed in this study.

Researchers have examined quality particularly in relation to preschool at-risk children (Peisner-Feinberg, et. al., 2001). Positive childcare provider-child interactions were associated with higher ratings of sociability and fewer behavioral problems through the second grade. The effect of quality on socioemotional outcomes was even greater for children whose mothers had less education. Further, the impact of quality care on these children persisted beyond the preschool years. Other research has also demonstrated enduring effects of childcare quality on at risk children's social development. Higher

childcare quality was found to be a protective factor for African American children who were exposed to multiple environmental risks (Burchinal, Roberts, Zeisel, Hennon, & Hooper, 2006). Children in higher quality childcare showed fewer behavior problems in the first four years of elementary school than children who were in lower quality care.

Although there is some debate on the overall impact of childcare on socioemotional development, it appears that children in high quality childcare are more socially competent, show reduced aggressive behaviors, and overall have better social-emotional outcomes than children who are in low quality care. This seems to be especially true for children in at-risk and low income samples. It may be that these more vulnerable children can benefit the most socioemotionally from being in high quality settings.

Attachment

A major question that has to some extent dominated the debate around childcare is whether it affects children's relationships (e.g., attachment) with their own parents, particularly their mothers. Some scholars and practitioners have suggested that the decrease in time that children in childcare spend with their parents may affect the attachment relationship (Barglow, Vaugh & Moliter, 1987; Belsky & Rovine, 1988). This is a particularly salient issue because an insecure attachment relationship has been associated with social-emotional, behavioral, and academic problems, such as internalizing and externalizing behaviors (Kennedy & Kennedy, 2004).

Earlier researchers had found associations between childcare enrollment and insecure attachments (Belsky & Rovine, 1988; Lamb, Sternberg & Prodromidis, 1992). For example, Belsky and Rovine (1988) found that children in extensive (as defined by

20 hours of care per week or more) non-parental care were more likely to be categorized as insecurely attached than children who were not in extensive care. These authors found this to be true for both attachment to mother and attachment to father. This study has several limitations however. First, the sample used in this study was of maritally intact, middle and working class families, which is not representative of the overall population. Also, they did not control for the type or quality of non-parental care, or specific family factors.

To address these issues, the NICHD Early Child Care and Research Network team (ECCRN) investigated more carefully the relationship between maternal attachment and childcare. When children were fifteen months old, there were no main effects of childcare on the mother-infant attachment relationship (NICHD ECCRN, 1997a). The researchers examined a variety of child care factors (e.g., type of care, amount of care, frequency of care starts, age at entry and quality of care) and found that none of them significantly predicted attachment security. However, they did find that maternal sensitivity and responsiveness were significant predictors of mother-child security. The ECCRN team also found that children whose mothers were less sensitive and responsive were more likely to be securely attached if they were in high-quality childcare settings. High quality childcare may serve as a protective factor for children whose mothers are not as sensitive or responsive to their needs. On the other end, they also found that poor-quality and unstable care appeared to add to the risks of insensitive and unresponsive mothering. When children were 36 months old, there were still no main effects of childcare on attachment security (NICHD ECCRN, 2001a). Similar to the earlier findings, more hours per week in care in combination with insensitive and less responsive

mothering were associated with insecurity, but childcare variables by themselves did not impact the mother-child attachment relationship.

A more recent study of maternal attachment by Caldera and Hart (2004) also found that childcare variables in and of themselves did not predict attachment security. Similar to the NICHD findings, children whose mothers were less sensitive but who spent more time in care were more likely to be securely attached. No specific amount of hours of care was identified as being a risk. Scholars involved in the Early Head Start Research and Evaluation Project explored the association between childcare, attachment security, and language and cognitive outcomes (Spieker, Nelson, Petras, Jolley & Barnard, 2003). Attachment security was not impacted by enrollment in childcare. Interestingly, insecure children who were enrolled in center care were more competent on cognitive and language assessments than insecurely attached children who were cared for by their mothers at home. Being in childcare seemed to enhance these children's cognitive and language skills and may have compensated for difficulties in the mother-child relationship. However, for children who were securely attached, childcare did not enhance nor decrease their cognitive or language scores. It may be that for children who are securely attached, center care may have few effects on language and cognitive abilities, but for low-income insecurely attached children, center care may improve their skills.

In sum, no direct links between childcare and maternal attachment security have been found in the recent literature. Enrollment in childcare is not necessarily a risk factor for a disruption in the mother-child attachment relationship. Further, there is some indication that for children with insensitive and unresponsive mothers, high quality

childcare can be a protective factor in the attachment relationship. High quality childcare can support children who are insecurely attached to their mothers to have a broad range of positive outcomes compared to those who stay at home with an insensitive mother. Evidence suggests that this may be especially true for at-risk, low-income children.

The literature on childcare quality demonstrates a clear link between childcare quality and child development across all domains. Given the benefits of high quality care for child outcomes, it is important to consider the contextual factors which contribute to the quality of the childcare classroom. Both proximal and distal factors should be considered when examining what effects the quality of a childcare environment. A proximal variable studied frequently is childcare provider education. Less research has examined how more distal factors, such as neighborhood poverty, influence childcare quality. It is important to use a broad contextual framework and to include features of the classroom in addition to more distal variables when examining what contributes to the quality of the childcare environment.

Childcare Provider Characteristics

The childcare industry experiences one of the highest turnover rates in the country. Because childcare providers contribute greatly to the quality of the early childhood classroom, and also to child development, workforce instability could have a drastic impact on childcare quality and child outcomes. It is estimated that the turnover rate for childcare jobs is 30% compared with 7% for elementary school teachers (Whitebook & Bellm, 1999). A variety of reasons are cited by scholars as to why both childcare workers and elementary school teachers may leave their professions. Low pay, low status (Whitebook & Sakai, 2003), gains in experience and education, job stress

(Todd & Deery-Schmidt, 1996), and working in schools with lower incomes and high populations of minorities (Scafidi, Sjoquist, & Stinebrickner, 2007) are some of the reasons given for high turnover rates. Research on the characteristics of child care providers is critical to inform the early childhood field's efforts to build and sustain a child care workforce.

Most widely studied in the literature on childcare provider characteristics is the impact of childcare provider education on classroom quality. Other characteristics studied less frequently include childcare provider experience, wages, and psychological variables such as depression (Kontos & Wilcox-Herzog, 2001; LoCasale-Crouch, Konold, Pianta, Howes, Burchinal, Bryant, et al., 2007; Pianta, Howes, Burchinal, Bryant, Clifford, Early, et al., 2005). Although childcare provider experience is associated with classroom quality, the results are not always supported (Kontos & Wilcox-Herzog, 2001). Researchers have documented that experience was related to classroom quality but that the effect of experience was mediated by other characteristics of the childcare provider, such as depression (Pianta, et al., 2005). Other researchers have shown that childcare provider experience is related to quality in the highest quality classrooms, but that in low quality classrooms, experience is not associated with classroom quality (LoCasale-Crouch et al., 2007). Additionally, childcare providers' wages are not always associated with classroom quality (Pianta, et al., 2005). The impact of the above characteristics of childcare providers on childcare classrooms is studied less frequently than the impact of childcare provider education, a subject to which I now turn.

Given the ability to intervene with the education and training of childcare providers, it is this characteristic of classroom childcare providers that will be considered

in this study. Childcare providers with less education and training may not provide the quality environment that more educated childcare providers can (Burchinal, Cryer, Clifford & Howes, 2002). Additionally, childcare providers with more education may be equipped with the skills necessary to teach effectively in a stressful situation, for example, in an impoverished neighborhood. Drawing form the literature on parenting in impoverished neighborhoods, researchers have shown that living in poverty can negatively impact parenting practices, such as parenting warmth, but that individual characteristics of the parent, such as education, can mediate the negative impact of the neighborhood on parenting practices (Pinderhughes, et.al., 2001). Childcare providers' education level may also mediate some negative impact of neighborhood poverty on childcare quality.

Educational and training requirements for early childhood educators vary greatly. The National Association for the Education of Young Children (NAEYC) recommends that all lead childcare providers have at least an associate's degree (AA) in early childhood education (ECE) or child development, with the bachelor's degree preferred (Bredekamp & Copple, 1997). Assistant childcare providers should have at a minimum a high school education and specific training in early childhood education or child development. According to NAEYC, all childcare providers are expected to participate in ongoing professional development and training in child development and ECE. Similarly, Head Start childcare providers have minimal education requirements. Head Start Program Performance Standards mandated that by 2003 at least half of Head Start lead childcare providers had to have an AA, BA or graduate degree in ECE (Administration of Children and Families, Head Start Program Performance Standards, 1998). Childcare providers

without a degree were required to have at least a CDA or an equivalent certificate that meets the standards of a CDA credential. As is obvious from these recommendations, specific training and education in early childhood development are considered critical.

Researchers suggest that these recommendations have not always been met. Data from the Cost, Quality and Outcomes Study revealed that only 33% of childcare providers in early childhood classrooms had a bachelor's degree or more (Helburn, 1995). Slightly less than half of childcare providers (47%) had an Associate's degree or a Child Development Associates (CDA). The percentage of childcare providers with a high school education or less was 20%. Assistant childcare providers often have less education than lead childcare providers. Although the Cost, Quality and Outcomes (Helburn, 1995) study revealed that 33% of lead childcare providers in childcare classrooms had a BA or higher, only 12% of assistant childcare providers had a BA. Almost half (43%) of assistant childcare providers had only a high school diploma or less. These percentages do not reveal the specification of training or degree these childcare providers hold. Thus, it is possible that the 33% of childcare providers with a BA do not have a degree in ECE or child development.

Early childhood childcare providers play a pivotal role in the quality of the classroom environment they provide (Burchinal, Cryer, Clifford & Howes, 2002; Phillipsen, Burchinal, Howes & Cryer, 1997; Scarr, Eisenberg & Deater-Deckard, 1994; Zill et al., 2001). The specificity of childcare provider's education may impact childcare quality, and in turn, children's developmental outcomes (Howes, Whitebrook & Phillips, 1992). Specifically, childcare provider education is considered a structural indicator of classroom quality (i.e., regulatable characteristic). More educated childcare providers

may have the skills and training necessary to have positive, sensitive and responsive interactions and to provide opportunities for stimulation, which are evident in high quality early childhood environments.

There is a growing body of literature that relates childcare provider training and education to global classroom quality (Burchinal, Cryer, Clifford & Howes, 2002; Phillipsen, Burchinal, Howes & Cryer, 1997; Pianta, et al., 2005; Scarr, Eisenberg & Deater-Deckard, 1994; Zill et al., 2001). Typically, childcare providers with more education have higher quality classrooms. Having a bachelor's degree has been associated with providing higher quality classrooms, as measured by the ECERS and ITERS, and having more positive interactions with children than childcare providers with less than a bachelor's degree (Burchinal, Cryer, Clifford & Howes, 2002). Scarr, Eisenberg, and Deater-Deckard (1994) found that global classroom quality was related to childcare provider's education level. Childcare providers with higher education were more likely to have high global quality classrooms than childcare providers with less education.

Higher childcare provider education has been associated with specific features of the classroom environment. For example, classrooms staffed by childcare providers with higher education had higher overall classroom quality scores as measured by the ECERS, as well as higher scores on language interactions, activities, personal care routines, and social interactions (Zill, et al., 2001). Phillipsen, Burchinal, Howes, and Cryer (1997) found that in both infant and preschool classrooms, education was related to overall classroom quality. Childcare providers who had at least some college or a bachelor's degree provided higher quality classrooms than childcare providers with no college

education. However, when other parent and center characteristics were included, this effect was diminished.

In addition to overall classroom quality, researchers have also shown that childcare providers with more formal education demonstrate classroom practices that are more developmentally appropriate (Howes, Whitebook & Phillips, 1992). Childcare providers with more education have been shown to have more positive interactions with children and less punitive and harsh discipline than childcare providers with less education. Additionally, childcare providers with higher levels of education have been found to have higher quality language activities than childcare providers with lower levels of education (Zill, et al., 2001).Childcare providers enrolled in college courses in child development have shown gains in beliefs about what is developmentally appropriate in the classroom, as well as gains in overall quality of their classroom (Cassidy, Buell, Pugh-Hoese & Russell, 1995). In an evaluation of the T.E.A.C.H. scholarship program, childcare providers showed increases in global classroom quality over 9 months while they were enrolled in college courses (Cassidy, Buell, Pugh-Hoese & Russell, 1995). A comparison group of similar childcare providers not enrolled in the program showed a decline in classroom quality. Additionally, childcare providers enrolled in the program endorsed more developmentally appropriate beliefs over time, indicating that the education they were receiving in the program might be contributing to more appropriate beliefs and practices in the classroom.

To examine this relationship more closely, some researchers have investigated the relationship between education and childcare provider behaviors, such as responsiveness, sensitivity and positive interactions. Many have found that, in general, childcare

providers with more formal education or higher levels of education are more positive, responsive and involved than childcare providers with less training and education (Arnett, 1989; Howes, Whitebook & Phillips, 1992; Ruopp, Travers, Glanz, & Coelen, 1979; Wilcox-Herzog, 2002). Childcare providers with more formal education have been found to be more warm and engaged, as well as less detached and harsh with children than childcare providers with less formal education (Howes, Whitebook, & Phillips, 1992). Arnett (1989) also found that childcare providers with 2-4 years of college were more positive in interactions and less detached with children than childcare providers with fewer than 2 years of college. Similarly, researchers have noted that Head Start childcare providers with more education are more sensitive and responsive to children than childcare providers with less education (Zill, et al., 2001).

One complexity in studying childcare provider education is the distinction between specialized early childhood education and non-specified education. Specialized education generally refers to specific course work in early childhood education, education, child development, psychology, and related fields. In general, childcare providers with specialized education in early childhood education are found to be more sensitive, more responsive, and less punitive than childcare providers with less or no early childhood specialized education (Arnett, 1989; Howes, Whitebrook & Phillips, 1992). McMullen (1999) found that childcare providers who were rated high in DAP practices were more likely to have an academic background specialized in ECE. Similarly, childcare providers with ECE teaching certificates have more positive verbalizations towards children and higher levels of involvement with children in their classrooms than childcare providers without ECE certification (Wilcox-Herzog, 2002).

Additionally childcare providers with 4-year degrees in early childhood have been found to create a more positive emotional climate, including enthusiasm, enjoyment, and respect between the childcare provider and children, and provide more activities than childcare providers without formal training in early childhood education (Pianta, et al., 2005).

Childcare providers with degrees in ECE have also been shown to be more likely to practice DAP than childcare providers with elementary degrees (Vartulli, 1999). Vartulli (1999) found that pre-school childcare providers with degrees in ECE were more likely to practice DAP, such as individualized lessons and providing active exploration, than kindergarten and elementary childcare providers. Additionally, childcare providers with higher formal education in ECE demonstrate more knowledge of DAP than childcare providers without formal, specialized education in ECE (Snider & Fu, 1990). Childcare providers responded to vignettes describing classroom situations and made judgments regarding the appropriateness of the practice described. Childcare providers with more specialized education in ECE were more likely to identify the vignettes correctly than childcare providers with less specialized education. This was true even of high school students. High school students with any course work in ECE or child development had more knowledge of developmentally appropriate practices than high school students who have no background in ECE.

Although the relationship between specialized education and DAP is fairly clear, there is still some controversy in the literature regarding the link between specialization and classroom quality. Childcare providers with a specialized degree in ECE have been shown to exhibit higher proportions of punishment than childcare providers without a

specialized degree (Kemple, David, & Hysmith, 1997). Researchers have also shown that a specialization in early childhood specifically may not be the only factor to consider when examining classroom quality. Early et al. (2006) found no differences between childcare providers who had a bachelor's degree in ECE and childcare providers who had a bachelor's degree in a different type of education. It may be that the interaction between level of education and specialization is important to consider. Also, a bachelor's degree in elementary education, for example, may have some similarities to a degree in ECE.

Still, the relationship between level of formal education and classroom practices and quality is not always clear. Some investigators have not found a relationship between higher education and higher quality classrooms. Scarr, Eisenberg, and Deater-Deckard (1994) found only a small correlation between childcare provider education and process quality. Others have found no direct relationship between formal education and childcare quality, although there was a relationship between specialized education in ECE and classroom quality (Roupp, Travers, Glanz, & Coelen, 1979). In a study of state funded pre-kindergarten programs, there was no association between years of education and classroom quality (Early, et al., 2006). These researchers also found no differences in classroom quality for childcare providers with a bachelor's degree and those without a bachelor's degree.

Researchers who conducted a meta-analysis of seven large-scale studies of childcare also reported no relationship between provider education and classroom quality (Early, et. al., 2007). In this meta-analysis, quality was measured through observations, and providers were interviewed or surveyed about their highest levels of education. Five of the seven studies were considered statistically representative because participants were

randomly selected from a known population. Two of the studies were designed to examine exclusively Head Start and Early Head Start classrooms. The remaining studies included a combination of state-funded pre-kindergarten, Head Start, and community childcare from all over the United States. Providers' highest level of education was used to define education in these studies. Providers were grouped according to the highest level obtained, and additional analyses were conducted by comparing providers with a bachelor's degree to those without. Additionally, control variables were included in the meta-analysis. Some of these controls included staff: child ratio, class size, proportion of children in the classroom living in poverty, and provider ethnicity. These extensive controls and examination of seven large scale studies yielded the finding that there was no relationship between provider education and classroom quality, suggesting the relationship between provider education and classroom quality warrants further empirical attention to address these conflictual findings.

In sum, the relationship between general level of education and classroom quality is not consistently supported by the evidence (Early et al., 2007). Although the data are somewhat inconsistent, more specialized education appears to be related to classroom quality. Some relationships were found in a few of the studies between specialized early childhood education and classroom quality, but not in all. Early et al. (2007) also reported that within seven large scale studies, there was often variability in the associations between quality and education between sites. Positive associations were found in some sites, when negative associations were found in other sites in the study. This variability may be due to factors external to childcare provider education, such as features of the sites or neighborhoods where the centers were located.

The overall relationship between caregiver education and child care quality is still unclear. Further, the relationship between childcare provider education and neighborhood variables is virtually unexplored. There is some evidence that neighborhood factors can interact with an individual's education level to impact the individual. For example, researchers have found that the risk of pregnancy problems of mothers with low education levels was greater if they lived in poorer neighborhoods than if they lived in low poverty areas (Caughy, O'Campo, & Brodsky, 1999). The interaction between childcare provider's education and poverty is important to consider. It may be that childcare providers with less education in high poverty areas provide poorer quality care than childcare providers with similar education in a less impoverished neighborhood, due to the influence of neighborhood variables. Researchers have suggested that living in an impoverished neighborhood can be stressful for parents and can impact their abilities to parent effectively (Klebanov, Brooks-Gunn, & Duncan, 1994). The same may hold true for childcare providers teaching in an impoverished neighborhood. If the stresses of teaching in an impoverished area can impact childcare providers' strategies and warmth in the classroom, individual characteristics of the childcare provider, such as education level, may exacerbate or compensate for the negative impact of the neighborhood.

The Neighborhood as a Context for Child Development and Childcare

The Empirical Study of Neighborhoods

The impact of neighborhood variables on child development is a burgeoning area of study. Currently, researchers in this field often examine specific structural variables of the neighborhood. Neighborhood disadvantage is most frequently studied, typically operationalized as neighborhood poverty, the percentage of single-headed households,

and the concentration of African Americans in the neighborhood. Less often studied, but gaining empirical attention are neighborhood stability, which examines the fluctuation of residents in and out of neighborhoods, home-ownership, ethnic heterogeneity, and the protective influence of affluence in the neighborhood. However, the empirical support for the influence of these factors on child development is still unclear (Morenoff, Sampson, & Raudenbush, 2001), whereas the relationship between neighborhood disadvantage and child outcomes has been established (Sampson, Morenoff, & Gannon-Rowley, 2002).

It has been reported that the concentration of poverty has increased significantly in the recent decades as the concentration of affluence has also risen (Sampson, Morenoff, & Gannon-Rowley, 2002). This increase has led many researchers to consider the effects of neighborhood poverty on child development. Some researchers are beginning to examine more process variables of the neighborhood, for example social cohesion and ties. These process variables often rely on individuals' characterization of the neighborhood, or on time-consuming, expensive observational methods (Sampson, Morenoff, & Gannon-Rowley, 2002). Given the limited research linking neighborhood quality to child development, contexts, and outcomes, it is still important to consider the structural measures of neighborhood quality.

Neighborhood Context and Child Development

The impact of neighborhood characteristics on child development is receiving increasing empirical attention. Living in impoverished neighborhoods is related to adverse child outcomes, such as lower reading and math achievement (Kowaleski-Jones, Dunifon, & Ream, 2006; Morales & Guerra, 2006). Conversely, researchers have shown that a large proportion of affluent neighbors in the community can have a positive impact

on cognitive competence and IQ in children (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Duncan, Brooks-Gunn, & Klebanov, 1994). Additionally, investigators have shown that neighborhood factors interact with minority status to impact outcomes for children. For example, African-American adolescents living in low SES and predominately African-American neighborhoods exhibit higher blood pressure than white adolescents living in higher SES and predominately white neighborhoods (McGrath, Matthews, & Brady, 2006).

Early research examining the effect of neighborhood poverty on child outcomes revealed that neighborhood variables can have both negative and positive influences on development. Duncan, Brooks-Gunn, and Klebanov (1994) found that having affluent neighbors was associated with higher IQ scores in children at age five. They suggested that having affluent neighbors may change access to social resources for people in the neighborhood, which may impact child development. However, the researchers also found that having poor neighbors was associated with increases in externalizing behavior problems. These neighborhood effects were smaller than the effects of the family on child outcomes, but were still significant over and above family variables.

Other researchers have examined the interaction of family, individual characteristics, and neighborhood disadvantage on child development. In a study of African American children entering first grade, neighborhood poverty, social capital, and negative climate of the neighborhood interacted with parenting practices to impact cognitive skills and behavior problems (Caughy, O'Campo, Nettles, & Lohrfink, 2006). For example, children from a home rich in African American culture had fewer internalizing behavior problems when they lived in neighborhoods with high social

capital, but this impact decreased as social capital decreased. Morales and Guerra (2006) found that family, school, and neighborhood stress all contributed significantly to a decrease in reading and math scores and an increase in depression and aggression for elementary school children. However, in this study, neighborhood stress was measured by the individual's perception of neighborhood violent events, and not a structural measure of neighborhood environment such as census data on poverty.

Researchers have also examined the influence of neighborhood variables on child outcomes when controlling for family factors. Researchers using the Panel Study of Income Dynamics Child Development Supplement (PIDS-CSD), an annual nationally representative study of families in the U.S., in combination with census data on neighborhood SES, documented that both reading and math achievement scores were influenced by neighborhood SES (Kowaleski-Jones, Dunifon, & Ream, 2006). Living in a neighborhood with low socioeconomic resources was associated with lower math and reading achievement scores. These results were obtained even after controlling for family characteristics such as family income, and individual characteristics such as gender and race. However, neighborhood SES was not associated with classroom disruptions or language adaptivity. Still, this research shows the impact of the neighborhood on child outcomes even after controlling for individual and family characteristics. Caughy and O'Campo (2006) found similar results. An increase in neighborhood poverty was associated with a decrease in problem solving abilities in preschool aged African American children. This impact of neighborhood poverty was significant over and above family poverty. Although they expected parenting to mediate the relationship between neighborhood poverty and cognitive skills, this was not the case. It appears that

neighborhood variables impact child development in a different, additional way than family or individual characteristics.

Although there is emerging evidence that neighborhood factors can impact child development, the mechanisms by which they affect development remain unclear. Childcare quality is a possible pathway through which the neighborhood impacts child development. For example, proximity to street traffic, a neighborhood variable, is related to restrictions in outdoor play in young children and diminished motor skills (Huttenmoser, 1995). This proximity to traffic may also impact the quality of childcare in that neighborhood because of reduced access to gross motor space. There is a paucity of research on how neighborhood variables influence childcare quality directly. Examining some of the literature on community resources and services may shed light on how the neighborhood may influence childcare quality.

Neighborhood Services

Accessibility and quality of services.

An examination of the impact of neighborhood factors on childcare must be informed by other literatures, as the research linking neighborhood and childcare factors is limited. Evidence from the field of public health services regarding neighborhood poverty is relevant for the study of neighborhood poverty and childcare. Researchers have shown that there are differences in mental health service utilization between high and low poverty areas (Chow, Jaffee, & Snowden, 2003). Additionally, health service utilization has been found to interact with minority status. For example, in high poverty areas, Asians were twice as likely as Whites to use emergency services (Chow, Jaffee, & Snowden, 2003). Other research has also demonstrated a link between neighborhood

poverty and service use/treatment. Researchers have reported that patients with co-morbid mental and substance abuse disorders who resided in a low income neighborhood were more likely to continue treatment in the community (Stahler, Mazzella, Mennis, Chakravorty, Rengert, & Spiga, 2007). This research demonstrates the complexity of the relation between neighborhood poverty and service use.

There is evidence that living in poverty is related to fewer visits to health care professionals. Specifically, researchers have documented that families living in poverty were less likely to have seen a physician in the previous year than those who were not living in poverty (Andersen, Yu, Wyn, Davidson, Brown, & Teleki, 2002). Similarly, Kirby and Kaneda (2005) documented that people living in a disadvantaged neighborhood were less likely to have a usual source of health care, such as a primary care physician, and were more likely to have unmet health needs. Additionally, they were less likely to have access to preventative health care measures that might have impacted future health problems.

Further, Perloff and Jaffee (1999) examined the impact of neighborhood disadvantage on entry into prenatal care. They found in more disadvantaged (i.e., poor) neighborhoods, mothers were more likely to enter prenatal care at a later date in pregnancy (i.e., after the fifth month). The effects of the neighborhood were found even after controlling for individual characteristics of the mother. Additionally, living in a neighborhood with fewer available physicians was related to late entry into care. Taken together, these studies suggest that living in impoverished neighborhoods blocks access to critical services, and perhaps to development-promoting services such as quality childcare (Caughy, O'Campo, & Brodsky, 1999).

Although access to services, such as health care, is important to consider for human development, other researchers have shown that satisfaction with community services varies by neighborhood poverty. For example, investigators have shown that people living in high poverty areas are less satisfied with the quality of police, emergency medical services, and street maintenance than those living in low poverty areas (Kelly & Swindell, 2002). Such studies underscore the importance of examining service quality as well as utilization. Further, this line of research illuminates the need for examination of the quality of resources available in communities, in particular, childcare quality.

Availability of resources.

The availability of community resources varies by neighborhood. It has been hypothesized that economically disadvantaged neighborhoods may be lacking in basic institutional resources, such as libraries, banks, and retail stores, and have a higher prevalence of establishments that foster deviant behavior, such as bars (Peterson, Krivo, & Harris, 2000). Some researchers have also found that there are fewer resources for physical activity (i.e., parks, recreational facilities, fitness centers) in low and medium SES neighborhoods than in high SES neighborhoods (Estabrooks, Lee, & Gyuresik, 2003). However, recently researchers have found that community resources (e.g., childcare, grocery stores, and pharmacies) in general are more available in impoverished neighborhoods (Small & McDermott, 2006). People living in impoverished neighborhoods have access to resources for everyday living. This conflict in the literature has led to a closer examination of neighborhood resources. Small and McDermott (2006) found that contextual effects (i.e., neighborhood poverty, proportion of foreign-born people in the neighborhood) influenced this availability. Although there was an overall

relationship between neighborhood poverty and resources, the number of resources per community varied from city to city, indicating that factors specific to the locale may contribute to the availability of resources.

Researchers have examined the availability of childcare, specifically in impoverished neighborhoods. Given evidence that parents report proximity to childcare as a factor in their childcare decisions, it is important to consider availability of childcare in specific neighborhoods (Barbarin, McCandies, Early, Clifford, Bryant, Burchinal, et al., 2006). The relationship between neighborhood poverty and availability is not always clear. Queralt and Witte (1998a) found that the supply of childcare was lower in economically distressed neighborhoods than in areas where the neighborhood was not disadvantaged. Fuller and Liang (1996) also found that availability in low income areas was less than in high income areas. Interestingly, they observed a curvilinear relationship when comparing childcare availability across multiple income levels. Neighborhoods of working-class and lower middle-class neighborhoods had the least amount of availability, whereas more impoverished and more affluent neighborhoods had more available childcare.

In contrast, some researchers report that childcare availability does not differ across poverty levels (Small & Stark, 2005). However, Small and Stark (2005) found differences in the type of childcare available in neighborhoods. In the more impoverished neighborhoods, there was more publicly funded and less privately funded childcare available than in more middle class neighborhoods. These differences point to further complexities in childcare availability and the relationship of neighborhood variables and childcare. Although extant research has documented the relationship between childcare

availability and neighborhood poverty, very few studies have examined the impact of neighborhood poverty on childcare quality.

Neighborhood and Classroom and Center Quality

Given the relationship between neighborhood factors and childcare availability, emerging research has begun to examine the relationship between neighborhood variables and childcare quality. There is evidence that certain structural measures of quality do not differ across neighborhoods (Fuller, Holloway, Bozzi, Burr, Cohen, & Suzuki, 2001). For example, in a study using structural indices of quality, such as staff: child ratios and group sizes, no differences were found between high- and low-income neighborhoods (Fuller & Liang, 1996). This may be due to statewide regulations of ratios in childcare settings, and therefore be unrelated to poverty in the neighborhood. Similarly, in a comparison of childcare centers from low, middle, and high income families, no differences were found in the three groups on either staff: child ratio, or group size (Phillips, Voran, Kisker, Howes, & Whitebook, 1994). However, different results have been reported in studies examining childcare provider characteristics. The proportion of childcare providers with specialized and in-service training was lower in childcare centers serving middle-class families than in childcare centers serving low and upper income families (Phillips, Voran, Kisker, Howes, & Whitebook, 1994).

Researchers have shown that there is variability in childcare quality across neighborhoods and cities (Fuller et al., 2004). For example, investigators have reported that childcare quality is higher in centers serving poor families as compared to centers in more middle-class, blue-collar areas (Fuller, Raudenbush, Wei, & Holloway, 1993). This may be due to the amount of subsidies families in low-income neighborhoods receive.

This curvilinear relationship is similar to the one seen when examining childcare availability. It is suggested that families who are the most impoverished have access to various subsidies and support to defray the high cost of childcare, whereas families who do not meet the subsidy requirements are not able to afford higher quality childcare out-of-pocket.

Additionally, the number of childcare providers in zip-codes varies in a similar manner as quality. Numbers of childcare providers per capita in poor neighborhoods are higher than in middle-class, blue-collar areas (Fuller, et al., 2001). The availability of high quality childcare providers in impoverished areas is important to consider in light of the research linking childcare provider education and classroom quality. As childcare providers determine classroom structure and experiences, the education of the childcare provider is a major influence on the daily classroom activities that children experience. The curvilinear pattern has also been found in regard to activities in the preschool classroom. More appropriate activities have been found in childcare classrooms serving lower and upper income children than in classrooms serving middle income children (Phillips, Voran, Kisker, Howes, & Whitebook, 1994).

Despite the documented curvilinear relationship between neighborhood poverty and childcare quality, the evidence is still ambiguous. Some researchers report that childcare quality is lowest in areas serving families in poverty (Helburn, 1995; Loeb, et al., 2004). Others have found no differences in appropriateness of activities in infant and toddler classrooms, regardless of income level of the neighborhood (Phillips, Voran, Kisker, Howes, & Whitebook, 1994). They also found that centers serving primarily low-

income children were rated lower in childcare provider sensitivity and higher in childcare provider detachment than centers serving middle and upper income families.

Given this conflicting evidence, there is a need for additional research on neighborhood poverty and childcare quality. Further, it is important to consider how neighborhood poverty interacts with features of the classroom, such as childcare provider education, to impact classroom quality. Providers working in impoverished settings may face different challenges than providers in more affluent neighborhoods. Characteristics of the childcare provider, such as education, may help providers negotiate challenges faced in impoverished areas. To date, no research exists which examines these classroom and neighborhood variables together.

Methodological Critique and Research Directions

As previously noted, many gaps remain in the literature on childcare quality. First, research examining the impact of childcare provider education on childcare quality remains unclear. Inconsistencies in the childcare provider education literature may be related to the fact that researchers do not often examine the influence of larger contextual factors. Research aimed at clarifying the distinctions between different levels of education and specialized training is needed, as is research which more fully explores the relationship between education/training and classroom quality. It appears that higher quality is a characteristic of classrooms in which childcare providers have specialized education in early childhood education than in those staffed by childcare providers without specialized education. The question of a threshold for education remains. How much specialized education is needed to see these positive gains? Is it necessary to have a BA, a BA specialized in ECE, or is an associate's degree or CDA credential sufficient for

providing quality care? More research that distinguishes between these levels of degree in combination with specialization would help to address these questions.

Additionally, understanding the relationship between childcare provider education and other contextual factors, such as neighborhood poverty, is needed to help clarify why the relationship between education and classroom quality is not always found. It may be that in impoverished neighborhoods, childcare providers with more education have a more positive impact on classroom quality than childcare providers in more affluent neighborhoods.

The study of how neighborhood factors influence childcare is in its infancy. Although emerging research explores the link between neighborhood and childcare availability, only a handful of studies have examined neighborhood influences on childcare quality directly. Methodological issues which have been raised in the study of neighborhood factors in general are informative for the design of studies on neighborhood effects on childcare quality. First, most research on neighborhood influences focuses solely on poverty (Caughy, O'Campo, & Brodsky, 1999). Neighborhood poverty has been related to adverse outcomes for younger children in numerous studies. However, studies rarely address the mechanisms by which neighborhood poverty affects child outcomes, for example the contribution of the childcare environment to the development of young children growing up in impoverished neighborhoods.

Another methodological limitation in the study of neighborhood factors is defining neighborhood. Often researchers use census delineations which do not always capture the within neighborhood variability that may exist (Caughy, O'Campo, Brodsky,

1999; Mowbray, Woolley, Grogan-Kaylor, Gant, Gilster, & Shanks, 2007). The emerging field of geographic information systems (GIS) is establishing more precise measurements of neighborhood. This technology is emerging as a valuable way for social scientists to identify geographic characteristics of interest to study and provide visual representations of neighborhood data (Queralt & Witte, 1998b). Given the dearth of research linking neighborhood poverty to childcare classroom quality, the lack of precision in the definition, conceptualization and measurement of neighborhood should not prevent the development of research in this area.

Research examining how neighborhood variables relate to classroom quality is virtually non-existent. Given that new research documents that childcare quality differs across neighborhoods (Fuller, et al., 2004), it is critical to understand the features of the neighborhood that may explain these differences. This is especially important due to the fact that differences in quality may be related to the socio-economic status of people living in the neighborhood (i.e., blue-collar, low-income) (Fuller, Holloway, Bozzi, Burr, Cohen, & Suzuki, 2001). Characteristics of the neighborhood may affect the type and amount of resources available (e.g., educated childcare providers) to childcare centers, thus impacting quality.

Concluding Remarks

In sum, despite multiple studies on child care quality, there remains considerable debate around a variety of issues. Although there is clear evidence relating high quality care to positive child outcomes, the specific factors which contribute to childcare quality are still unclear. In particular, the relationship between childcare provider education and childcare quality requires further clarification. It is possible that the impact of childcare

provider education varies dependent upon larger contextual variables. Childcare providers with more education may be able to more effectively handle the challenges of working in an impoverished setting, such as lack of resources, and may provide higher quality care than providers with less education. To date, the impact of childcare provider education has not been studied in conjunction with neighborhood factors.

The study of neighborhood variables in relation to childcare is an emerging field. More social scientists are beginning to consider neighborhood factors in relation to developmental outcomes. Research on neighborhood poverty and availability of resources (e.g., health services) is available, but there is limited evidence on childcare services specifically. The relation of neighborhood factors to childcare quality is lacking. Studies combining neighborhood factors, teacher characteristics, and child care quality are virtually non-existent. The current study is designed to address these gaps in the literature and offer further elaboration of the evidence regarding childcare quality.

Chapter III: Method

The purpose of this study was to examine how childcare provider education and neighborhood poverty impact the quality of the classroom. Much controversy has surrounded the study of childcare provider education as it relates to classroom quality. Some research demonstrates that higher childcare provider education is associated with higher quality classrooms (Burchinal, Cryer, Clifford & Howes, 2002; Phillipsen, Burchinal, Howes & Cryer, 1997; Scarr, Eisenberg & Deater-Deckard, 1994; Zill et al., 2001), whereas other studies document no linkage (Early, et al., 2006). It may be that previous research has not examined the issue of childcare provider education in the larger context. The current study examined the interaction between childcare provider education and neighborhood poverty in relation to childcare quality. By using this broader contextual picture, the current study offered some clarification of the factors contributing to childcare quality.

In this study, the impacts of contextual factors, specifically, childcare provider education and neighborhood poverty, on childcare classroom quality in center-based settings were examined. Little research exists which examines neighborhood variables in relation to childcare quality. This study addressed the dearth of information on how neighborhood poverty impacts childcare quality. Four research questions were investigated: (1) Does childcare quality vary across neighborhoods? (2) Does childcare provider education impact classroom quality? (3) Does neighborhood poverty impact classroom quality? (4) Does the impact of childcare provider education on classroom quality vary as a function of neighborhood poverty?

It was expected that childcare quality would vary as a function of neighborhood. Although most of the centers in the present study were within the same city, it was expected that there would be varying levels of quality within classrooms and within neighborhoods based on the literature which shows that childcare quality varies by neighborhood (Fuller, et al., 2004; Fuller, Raudenbush, Wei, & Holloway, 1993). Given the conflicting literature on the impact of childcare provider education on classroom quality, and the dearth of research linking neighborhood poverty to classroom quality, this was an exploratory study. Therefore, no specific hypotheses were identified.

The current study involved secondary analysis of data collected in a major childcare study in the Philadelphia, PA metropolitan area, the Early 2 Learn project. This is a quality improvement initiative, which includes an evaluation component. This evaluation is an ongoing, longitudinal project, which began in 2003 with baseline data collection. These baseline data were used for the current study. Written permission was obtained from the study's Principal Investigator to use the data set (see letter in Appendix D).

In this chapter, I provide an overview of the United Way's program Early 2 Learn (E2L). Additionally, I explain the method used to determine the variables used in this study. I then describe the sample, including sample characteristics of childcare providers, classrooms, as well as neighborhoods in the study. Finally, I delineate the measures used in the study.

Early to Learn: Partners for School Readiness

Derived from research examining the school readiness of children in Philadelphia (Jaeger & Funk, 2001), the Early to Learn (E2L) project is a multifaceted initiative aimed

at improving childcare quality in order to increase the school readiness of children. Using a multidisciplinary approach, organizations representing early childhood education, healthcare, and business work collaboratively to provide technical assistance to childcare centers. E2L is an ongoing program, although only baseline data from the initial data collection phase was used in this study. Baseline data were collected before any technical assistance was provided. Thus, effects of the technical assistance provided during the initiative did not confound the quality of the classrooms observed at baseline. E2L was designed to improve the quality of the participating childcare settings, as well as to test the strategies implemented to improve quality.

Preschool Plus is a component of E2L designed to test the strategies used to improve childcare quality in the participating centers. Many organizations work together to provide technical assistance to participating centers, as well as to evaluate the initiative's overall effectiveness. However, separate agencies are responsible for the evaluation component and the technical assistance component. Preschool Plus provides individualized technical assistance to programs in order to improve quality and also to improve financial viability. Participating centers receive regular assessments of quality, funds to enhance quality, valuable connections with community organizations for support, and connections with two components of the larger E2L program, School Readiness Specialists and Kindergarten Transition. These two components provide support for parent engagement and strategies to improve children's transition to kindergarten.

Saint Joseph's University conducted the evaluation component of this project. In order to evaluate the overall effectiveness of Preschool Plus, as well as to document the

implementation of the initiative, quantitative and qualitative data were collected. Semi-structured interviews were conducted by members of the Saint Joseph's University staff with staff from mentor agencies, such as the Delaware Valley Association for the Education of Young Children (DVAEYC), Philadelphia Early Childhood Collaborative (PECC), The Reinvestment Fund (TRF), and Children's Hospital of Philadelphia (CHOP). Each individual classroom within the participating centers was observed using the Early Childhood Environment Rating Scale – Revised (ECERS-R; Harms, Clifford & Cryer, 1998) or the Infant/Toddler Environment Rating Scale (ITERS; Harms, Cryer, & Clifford, 1990). Observations were conducted by trained members of the Saint Joseph's University Child Development Laboratory.

Observations were conducted five times, starting in the fall of 2003 and ending at the end of Phase I of the project in 2006. Observations were used to support technical assistance and to evaluate the impact of the program. Classroom observations from the first round of data collection were used in the present study. Directors of the programs were surveyed annually during the program to assess center characteristics and to gather information about the directors' experiences with Preschool Plus. In addition to director surveys, lead childcare providers in each classroom were surveyed annually. Childcare providers' professional characteristics, such as highest level of education, beliefs about early childhood education, and their experience in Preschool Plus were evaluated through the surveys. Information from the initial childcare provider surveys were also used in this study.

Childcare centers were recruited for the project from the Philadelphia area. Initially, applications were sent to over 300 early childhood education settings in

Philadelphia and other targeted areas nearby. Of the applications received, certain sites were selected to receive visits from United Way of South Eastern Pennsylvania (UWSEPA) staff. Centers chosen for visits met at least one of the following criteria: 1) The center served over 50 children or they served fewer than 50 children but met other criteria; 2) The center served 50% or higher ethnic minorities or language minorities; 3) the center was part of a multi-site organization; 4) the center had 50% or more children receiving Child Care Information Services (CCIS; a Philadelphia city-wide childcare resource) or County Assistance Office (CAO; a Pennsylvania state-wide funding resource) subsidy; and/or 4) the program was located in low-income neighborhoods of Montgomery and/or Delaware counties in Pennsylvania.

After initial site visits, centers were selected into the larger UWSEPA Preschool Plus initiative based on feedback from mentor agencies, and a review by UWSEPA donors. After three rounds of site selection, 33 centers were included in Preschool Plus.

Sample/Participants

Center and Classroom Characteristics

Although 33 centers were included in the Preschool Plus program, for the present study, only 32 centers were used. One center was excluded from the sample since classroom childcare provider data could not be matched to specific classroom quality scores. Within the remaining 32 centers in the sample, 171 classrooms were observed. Specifically, 106 of these classrooms were preschool classrooms (serving primarily children 2 ½ through 5 years old) and 65 were infant/ toddler classrooms (serving primarily children up to 30 months). Only classrooms in which the lead childcare

provider completed the initial childcare provider survey were included in the analyses since the impact of the childcare provider on the classroom is being examined.

Centers in the entire Preschool Plus program served over 2,400 children and employed 446 full-time staff members. The number of children served by the participating centers varied widely. Centers were serving between 29 and 136 children ($M = 81.85$, $SD = 30.21$). The majority of the centers had non-profit status (85%) and had some experience working with technical assistance agencies in the last five years (82.4%). The mean years of operation for 31 of the centers (1 center was excluded from mean calculations because it was an outlier) was 14.78 years ($SD = 10.04$) although years in operation ranged from 1 year to 59 years. Almost half (47.9%) of the children served in these centers were receiving some form of subsidy. The centers included were serving a substantial proportion of minority children (79%) and a smaller proportion of English language learners (16.2%).

Childcare Provider Characteristics

Data were collected from lead childcare providers in participating classrooms. A total of 171 lead childcare providers completed surveys that could be matched to their classroom quality scores. Childcare providers' ethnic background varied, as is evident in Table 1. Also included in Table 1 is descriptive information about the number of providers currently working towards a degree and their commitment to remaining in the childcare field over the next 3 years. Highest education was collected as a categorical variable. However, the categories were ranked from least to highest amount of education. For example, one category was "some high school or less than a GED" and the next category was "High School Diploma/ GED." Childcare provider's educational

background ranged from less than a high school diploma or GED (3.5%) to a Masters degree (1.7%). Three childcare providers marked "other" for highest level of education and were dropped from the sample since it was unclear how much education they had received. See Table 1 for a detailed description of educational background.

For the analyses, childcare provider education was treated as a continuous variable. Statistically, treating categorical variables as continuous is acceptable when the distribution across categories is fairly symmetric with an internal mode (in other words, the mode is one of the middle categories rather than one of the extreme categories) and there are more than five categories included (Bollen & Barb, 1981). As shown in Table 1, there was variability within this sample and more than five categories were used. Additionally, previous researchers have treated categorical indices of childcare provider education as continuous variables when there are more than five categories included, and the categories are ranked from lowest to highest level of education (Howes, Whitebook, & Phillips, 1992; Phillips, Mekos, Scarr, McCartney, & Abott-Shim, 2000; Scarr, Eisenberg, & Deater-Deckard, 1994).

Neighborhood Characteristics

Data on neighborhood poverty was collected through the U.S. Census Bureau public data tables. Summary File 3 was used. Neighborhoods were determined by geo-coding (i.e., address matched to census information) center addresses to align with census block groups. Census block groups are relatively small geographically, as compared to other types of neighborhood delineations such as zip code, which can have much larger variation in geographic size and population. Therefore, there was no overlap in census

block groups and centers included in the study. The term neighborhood was used throughout this study, but each neighborhood corresponds to one particular center.

Procedures

Classroom Observations

Classroom quality was assessed with either the ECERS-R or the ITERS, depending on the age of the children served in the classroom. Trained fieldworkers spent approximately 5 hours in the classroom observing the physical space, activities, and interactions of the classroom using the environment rating scales (ERS). For any items that were not directly observable, fieldworkers interviewed both childcare providers and directors to obtain the needed information. Observations were conducted during the morning hours in order to observe childcare providers interacting with children while they were alert and awake. Fieldworkers aimed to observe without being intrusive or interrupting the typical daily activities. Observations took place on what was considered a "typical" day in the classroom, meaning that no special events, such as fieldtrips, interrupted the observation.

Childcare Provider Surveys

As part of the larger UWSEPA program, lead childcare providers in each classroom completed surveys. Included in the survey was demographic information, including information about highest level of education attained. Surveys were distributed by members of the Saint Joseph's team along with a small token of appreciation. Surveys were collected two days after distribution.

Neighborhood Data Collection

Neighborhood poverty was collected through the U.S. Census Bureau website. The Census 2000 Summary File 3 Sample Data was the data source for collecting neighborhood data. Census data are widely used in studies of neighborhood effects (Estabrooks, Lee, & Gyuresik, 2003; Fuller, et al., 2001; Fuller & Liang, 1996; McGrath, Matthews, & Brady, 2006; Peterson, Krivo, & Harris, 2000; Small & Stark, 2005; Small & McDermott, 2006). Data were collected at the level of census block group. Each center's address was matched with census data for the corresponding census block group.

Neighborhood poverty was derived from the census information. Specifically, neighborhood poverty was based on the number of people living below the poverty threshold. The number of people below the poverty threshold was divided by the total number of people in the census block group to determine a percentage of the population in that particular block group living below the threshold.

Measures

Classroom Quality

The Early Childhood Environment Rating Scale-Revised (ECERS-R; Harms, Clifford & Cryer, 1998)

The Early Childhood Environment Rating Scale is one of the most widely used measures of childcare classroom process quality in the literature. The ECERS-R consists of 43 items in seven subscales. The subscales are Space and Furnishings, Personal Care Routines, Language-Reasoning, Activities, Interactions, Program Structure and Parents and Staff. Items are scored from 1 to 7 with anchor scores at each odd number. A score of a 1 is considered "Inadequate" care, 3 is considered "Minimal" care, 5 is "Good" Care

and 7 is “Excellent” care. The ECERS-R is designed to be used in preschool classrooms serving children from 2 ½ to five years old.

Concurrent validity has been established between the ECERS-R and a measure of caregiver behavior. The Caregiver Interactions Scale (CIS; Arnett, 1989) measures the quality of childcare provider-child interactions. Higher scores on ECERS-R were associated with more sensitive (r (68) =.54, p<.001) and less harsh childcare providers (r (68) =-.52, p<.001) (Sakai, Whitebook, Wishard & Howes, 2003). The ECERS-R quality scores also show good predictive validity and have been related to positive child outcomes. Children in high quality classrooms show increased language skills (Burchinal, et al., 2000; Love, et al., 2003) and fewer internalizing and externalizing behavior problems (Votruba-Drzal, Coley & Chase-Lansdale, 2004). Interrater reliability for the ECERS-R has been reported in various studies from .77 (Votruba-Drzal, Coley & Chase-Lansdale, 2004) to.87 (average between 77 and 100% agreement; Roach, Riley, Adams & Edie, 2005). See Appendix B for a sample ITERS score sheet.

The Infant Toddler Environment Rating Scale (ITERS: Harms, Cryer, & Clifford, 1990)

The Infant/Toddler Environment Rating Scale is similar to the ECERS-R but is designed to assess global classroom quality in center-based classrooms serving children up to 30 months of age. The ITERS consists of 35 total items and has seven subscales, which align with those in the ECERS-R. The seven subscales are Furnishing and Display for Children, Personal Care Routines, Listening and Talking, Learning Activities, Interaction, Program Structure, and Adult Needs. Each item is rated on a seven point scale ranging from 1 (inadequate), 3 (minimal), 5 (good), and 7 (excellent). The ITERS

has been widely used, and has established reliability and validity (Clifford, Russell, Fleming, Peisner, Harms, & Cryer, 1989).

Reliability for this study for both ECERS-R and ITERS scores was above .80. After initial training on the use of the scales, reliability was checked throughout the project. Reliability was checked at least every ten site visits or at least once a month (if a fieldworker had not yet completed ten visits).

For the initial analyses, ECERS-R and ITERS scores were combined to examine the four research questions. Although the ECERS-R and ITERS have some different items, their overall concepts are similar and their subscales are comparable. Additionally, each scale gives an overall classroom rating, which ranges from 1 to 7. The meanings assigned to the scores are exactly the same for the ECERS-R and the ITERS. The overall classroom rating was used for analyses and is an average of the total sum of the scores divided by the total number of items. This allowed the scores from both versions of the Environment Rating Scales to be combined. Initial analyses revealed that quality scores between infant/toddler rooms and early childhood classrooms were not significantly different ($t(169) = -.06$, $p = .955$). Additionally, as is explained further in the data analytic plan, "type of classroom" (infant/toddler or preschool) was used as a fixed control variable in level one of the HLM model.

Preliminary analyses revealed that there was a marginally significant difference between childcare providers' level of education in infant/toddler and early childhood classrooms ($t(169) = -.181$, $p = .073$). The mean level of education in infant toddler classrooms was 3.09($SD = 1.25$) compared to the mean level of education in early childhood classrooms of 3.44($SD = 1.23$). Early childhood childcare providers had

marginally significantly higher education than infant/toddler childcare providers. However, in order to retain a larger sample size needed for HLM analyses, classroom scores for ITERS and ECERS-R classrooms were both included to answer the original research questions. See Appendix C for a sample ITERS score sheet.

Childcare Provider Data

Childcare Provider Education Survey

Childcare providers completed a survey designed by the Early to Learn Team. Included in the survey was demographic information, such as race and highest level of education completed. Childcare providers were also asked to report about their experiences participating in the Early to Learn project and about their relationships with various technical assistance agencies. The only data included from this Survey in the present study relate to provider education. See Appendix A for the Childcare provider Survey.

Census Information

Census information was collected through the U.S. Census Bureau. The U. S. Census Bureau has various publicly available tables and data sets containing information from the most recent census. Specifically, data from the 2000 Summary File 3 was used. Data were collected at the census block group level. Census block groups are the smallest geographic unit for which the census collects sample data. These block groups may contain individual blocks, but in more rural areas, they can incorporate many square miles.

Neighborhood Poverty

Neighborhood poverty is a variable of interest in many studies of neighborhood characteristics. When examining neighborhood characteristics, poverty is often measured by using the percentage of the population that is below the poverty line (Estabrooks, Lee, & Gyuresik, 2003; McGrath, Matthews, & Brady, 2006; Peterson, Krivo, & Harris, 2000; Small & Stark, 2005; Small & McDermott, 2006). Data from the Census Bureau include a ratio of income to poverty level. This ratio is derived by comparing a person's total family income with the poverty threshold appropriate for that person's family size and composition. From these ratios, it is possible to determine the percentage of individuals in the neighborhood who are below the poverty threshold. This is the measure of neighborhood poverty that was derived for this study. The number of people in the census block group who are beneath the poverty threshold was divided by the total number of people in the entire census block to obtain a percentage of the population below the poverty threshold.

Conclusion

In sum, the current study was designed to examine the impact of provider education on classroom quality within the broader context of neighborhood poverty. Data were collected as part of the larger Early to Learn project funded by the United Way of South Eastern Pennsylvania. Classroom observations, in combination with provider characteristics obtained from surveys were used to assess classroom quality and provider education levels. Additionally, these data were supplemented by neighborhood poverty data obtained from the U.S. Census Bureau. Because of the nested nature of the variables, classrooms within neighborhoods, I used Hierarchical Linear Modeling (HLM) to

analyze the data. In the following chapter I present my data analytic plan, rationale for the use of HLM, as well as the results of the present study.

Chapter IV: Results

This study was designed to examine the impact of childcare provider education and neighborhood poverty on childcare classroom quality. Data were collected as part of the Early to Learn project, a quality improvement initiative in Philadelphia, PA. Components of data collection included observations of classrooms and surveys of childcare providers. Data on neighborhood poverty from the U.S. Census bureau were then added to complete the data set.

In this chapter, I provide a description of the data analytic plan, followed by information on data management strategies. Next, results of preliminary analyses are provided that offer a more detailed description of the data set, specifically information on classrooms, childcare providers, neighborhoods, and relations between study variables. Finally, I discuss results from the Hierarchical Linear Modeling analyses, and specific post-hoc analyses.

Data Analytic Plan

Preliminary analyses were first conducted to explore key variables for the current study. As such, descriptive data were examined regarding classrooms, childcare providers, and neighborhoods. Correlations between all study variables were also performed. Additional analyses were carried out to clarify findings of the main HLM analyses. These included t-tests, analysis of variance, and regression analyses.

Hierarchical Linear Modeling (HLM) was the main analytic approach for the present study. HLM was used to account for the nesting of classrooms within neighborhoods. Ordinary least squares regression does not sufficiently account for

nesting of classrooms within a center or within a neighborhood. Because multiple classrooms exist within one neighborhood (violating the assumption of independent observations), it is likely that classrooms within one center are more similar to one another than if they were randomly selected. HLM must be used in order to account for this "sharing" of neighborhood data between different classrooms (Bryk & Raudenbush, 1992).

To account for the clustering of classrooms within neighborhoods, a fully unconditional model was tested first. This is a HLM model with no predictors, used to determine if classroom quality varied by neighborhood (i.e., research question 1). To answer this question, this model partitioned the variance in classroom quality into two parts: the proportion of the variance explained by classrooms within the same neighborhood (pooled across neighborhoods); and the proportion of variance explained between neighborhoods. This information is used to compute the intraclass correlation, which is a measure of the proportion of total variability in classroom quality that is attributed to neighborhoods. If none of the variation is attributed to neighborhoods, then classrooms are independent observations, and HLM is not necessary to test the effects of childcare provider education and poverty on classroom quality. In this case, regression analyses may be conducted.

Next, the level 1 model was specified. This model addressed research question 2 - Does childcare provider education impact classroom quality, controlling for type of classroom? Type of classroom (infant/toddler or preschool) was dummy coded (with 0=preschool and 1=infant/toddler) and included as a fixed effect in the level 1 model, controlling for any possible differences between infant/toddler and preschool classrooms.

Type of classroom was dummy coded such that infant/toddler rooms = 1 and preschool rooms = 0. Childcare providers' highest level of education was included as a random effect in the level 1 model as a predictor of classroom quality, as reflected in the following equation.

$$(\text{Classroom Quality}) = \beta_0 + \beta_1 \textit{ childcare provider education} + \beta_2 \textit{ type of classroom} + r_{ij}$$

Neighborhood poverty was entered at level 2 of the model. The level 2 model was used to answer research question 3 - Does neighborhood poverty impact classroom quality? and research question 4 - Does the impact of childcare provider education on classroom quality vary as a function of neighborhood poverty? To answer question 3, an intercept model was used to examine the impact of neighborhood poverty on classroom quality, which is represented in the following equation.

$$\beta_0 = \gamma_{00} + \gamma_{01} \textit{ \%poverty} + \mu_0$$

To answer question 4, a slope model was specified to determine the effect of childcare provider education on classroom quality in relation to neighborhood poverty, as is depicted in the following equation.

$$\beta_1 = \gamma_{10} + \gamma_{11} \textit{ \%poverty} + \mu_1$$

For a graphic representation of the full hierarchical model, see Figure 2.

In level 1 of the model, childcare provider education was group mean centered. This is because it was expected that childcare provider education would vary across clusters. Centering controls the meaning of the intercept and reduces multicollinearity across levels. However, this approach can disregard some of the variation of childcare provider education between neighborhoods in the study. To address this, group means of

childcare provider education were entered into the level 2 models, specifically the mean childcare provider education level of each neighborhood was entered in level 2.

To summarize, HLM is the appropriate statistical analysis to be used when studying variables that are nested hierarchically. The current analysis explored the direct effects of childcare provider education on classroom quality, and also explored the interactions between neighborhood poverty and childcare provider education on classroom quality, without the aggregation difficulties which arise using conventional single-unit analyses techniques such as Ordinary Least Squares regression and Analysis of Variance.

Data Management

Data were entered into SPSS for initial descriptive analyses and data cleaning. Data were originally entered in separate files, one for childcare provider survey information and another for classroom quality scores. These files were then combined using the SPSS merge data technique to ensure that data from childcare provider and classroom files were matched accurately based on classroom codes. Classrooms were coded in the original project based on the physical space where the classroom was located. They were coded so that, upon future observations throughout the project, classroom quality data could be tracked and childcare providers could be matched with their classrooms. After the files were merged, data were checked to ensure that childcare provider information was matched correctly with the appropriate classroom quality score.

After merging the files, the data were checked for missing variables. Because of the nature of the analyses, only cases in which data existed for both childcare provider education and classroom quality were included in the sample. Therefore, any classrooms

that were missing either childcare provider education level or classroom quality scores were dropped from the final sample. Thirty-eight classrooms were dropped from the final sample because they were missing either classroom quality data or childcare provider data. T-tests were conducted to determine if there were any differences between classrooms that were dropped and those which were included. Analyses revealed that classrooms which were dropped had significantly higher quality than those which were included ($t(209) = 2.55$, $p < .05$) and childcare providers who were not included had significantly higher education than those who were included ($t(206) = 2.92$, $p < .01$). Frequency data and descriptive statistics were also examined to determine if there were any outliers. From these analyses, data were determined to be normally distributed and the remaining cases were included in the final sample.

Data for neighborhood poverty were first downloaded from U.S. Census Bureau Summary File 3 into an excel format. These data were then converted into an SPSS file and coded to ensure that neighborhood geographic area could later be matched to classrooms. Raw data from the Census Bureau were used to derive a percentage of the population in each neighborhood living in poverty. The total number of people living below the poverty line in each census block group was divided by the total population of that area to determine the percentage of the population living below the poverty level. These calculations were conducted using SPSS calculate tools. The data were checked to ensure that all neighborhoods had a final poverty level percentage. There were no missing neighborhood level data.

Preliminary Analyses

Descriptive statistics were calculated for all study variables. Classroom descriptive statistics will be described first, followed by childcare provider descriptive statistics, and finally neighborhood descriptive statistics. Table 1 provides means and standard deviations for childcare provider variables. Means and standard deviations for classroom study variables can be found in Table 2. Tables 3 and 4 describe means and standard deviations of classrooms based on type of classroom: infant/ toddler or early childhood and Table 5 provides descriptive information regarding the neighborhood data.

The mean number of children enrolled in the classrooms was 11.65 (*SD* = 4.06) and the mean number of children present on the day of the ERS observation was 9.62 (*SD* = 3.80). The number of staff present in the classrooms ranged from 1 to 6 (*M* = 2.22, *SD* = .82) and group sizes ranged from 4 to 21 (*M* = 11.65, *SD* = 4.06). Staff: child ratio was calculated in two ways: 1) number of staff present divided by classroom enrollment; and 2) number of staff present divided by children present on the day of observation. Ratios for enrollment ranged from .07 to 1.00 (*M* = .21, *SD* = .12) and for children present ratios ranged from .10 to 1.00 (*M* = .26, *SD* = .15). Classroom quality scores varied from 2.00 to 5.85 (*M* = 3.93, *SD* = .73). Initial analyses found no significant difference in level of classroom quality between infant/toddler rooms and early childhood classrooms ($t(169) = -.06$, $p = .955$).

Childcare providers' education level ranged from less than a high school diploma or GED (3.5%) to a Masters degree (2.3%). Childcare providers' racial background varied as well. There was a marginally significant difference between childcare providers' level of education in infant/toddler and early childhood classrooms ($t(169) = -$

.18, $p = .07$). The mean level of education in infant toddler classrooms was 3.09 (SD = 1.25) compared to the mean level of education in early childhood classrooms of 3.44 (SD = 1.23). Early childhood childcare providers had marginally significantly higher education than infant/toddler childcare providers.

Poverty levels of the 29 neighborhoods included in the study varied from 1% to 100% of persons in the neighborhoods living below the poverty threshold. The mean percentage of people in the neighborhoods studied living below the poverty level was 32.5% (SD = 21.4). Neighborhoods ranged in population as well, from 104 to 2640 people within the census block group, with a mean population of 968 (SD = 626.92).

Other analyses were conducted which were not key to the main research questions of the study, but helped to further explore the role of classroom and neighborhood variables regarding classroom quality. For example, as shown in Table 6, correlations between childcare provider education, poverty, and childcare quality ratings based on the Environment Rating Scales (ERS) were examined. Childcare provider education was not significantly correlated with the total ERS quality score ($r = .13$, $p > .05$). However, neighborhood poverty was significantly correlated with classroom quality ($r = .16$, $p < .05$). Significant correlations were found between a structural indicator of quality, staff: child ratio, and classroom quality. Overall, higher ratios (i.e. more staff to fewer children) were related to higher quality in all classrooms ($r = .20$, $p < .05$), particularly in Infant/ Toddler rooms ($r = .40$, $p < .01$).

Further, significant negative correlations were found between childcare provider education and staff: child ratio using the numbers of enrolled and present children (enrolled: $r = -.23$, $p < .01$; present: $r = -.17$, $p < .05$). Childcare providers who had higher

education were more likely to be in classrooms with lower ratios. Similarly, a correlation was found between number of children enrolled and childcare provider education. Childcare providers with higher education had more students enrolled in their classrooms ($r = .20$, $p < .05$). Preliminary correlations also revealed a positive correlation between neighborhood poverty and number of staff present in the classroom. Higher poverty levels were related to more staff present in the classroom ($r = .24$, $p < .01$).

In addition to these preliminary correlations, other analyses were conducted which examined the ERS subscales specifically. The ERS contains subscales which examine specific features of the classroom, such as interactions, activities, and physical space. Exploratory correlations were performed to examine if childcare provider education or neighborhood poverty were associated with any of the specific subscales of the ECERS-R or the ITERS. Tables 7 and 8 show correlations between childcare provider education, neighborhood poverty, and all the subscales of both the ECERS-R and the ITERS. Although the subscales of the ECERS-R and the ITERS are comparable, correlations were performed separately for the two measures.

In regard to childcare provider education, in infant/toddler and early childhood classrooms, childcare provider education was positively correlated with the space and furnishings of the classroom (ITERS: $r = .26$, $p < .05$; ECERS-R: $r = .27$, $p < .01$). Classrooms with more highly educated childcare providers had higher quality scores on items that capture the physical space of the classroom, such as room arrangement and displays within the classrooms, than classrooms with less educated childcare providers. (See Appendices B and C for full item names for each subscale). Childcare providers' education was also significantly positively correlated with the activities subscale in early

childhood classrooms (r = .21, p <.05). More education was positively related to higher scores on activities, such as music, arts, and blocks. Interestingly, education was not significantly correlated with the interaction subscales of both the ECERS-R and the ITERS (ECERS-R: r = -.02, p >.05; ITERS: r = -.09, p >.05).

Neighborhood poverty was significantly correlated with the Parents & Staff subscale of the ECERS-R and the Adult Needs subscale of the ITERS (ECERS-R: r =.33, p <.01; ITERS: r =.32, p <.01). These subscales contain items which measure aspects of the classroom such as provisions for parents, and opportunities for professional growth for staff. As neighborhood poverty increased, so did quality scores on items relating to meeting the needs of staff and parents.

Additionally, analyses were conducted to compare classroom quality based on level of childcare provider education. For this analysis, childcare providers were grouped categorically according to their education and an ANOVA was performed. Childcare providers were grouped into three categories: 1) high school diploma or less; 2) AA/CDA (initial analysis revealed no significant differences between these two groups, therefore they were combined for further analysis); and 3) BA and higher. ANOVA revealed that there were significant differences in classroom quality based on level of childcare provider education (F(2,168) = 7.19, p<.001). Tukey HSD Post Hoc analyses found that childcare providers with the AA/CDA had significantly different quality scores than childcare providers with High School and Less, and than childcare providers with a BA and higher (See Table 9). No significant differences were found between childcare providers with a high school diploma and less and a bachelor's degree or more. Notably,

classroom quality was highest in classrooms where the childcare provider had an AA or a CDA.

Multilevel HLM Results

Within-Neighborhood HLM Models Exploring Classroom Quality.

Research question one – Does classroom quality vary across neighborhoods?

An HLM model which examines the current research questions must begin by partitioning variance into its between- and within-neighborhood components. Informative here is the proportion of total variance in classroom quality that lies systematically between neighborhoods. This is the intraclass correlation (ICC). The fully unconditional model, which addresses the first research question, was first tested to determine the ICC. Over half (56%) of the variance in classroom quality lies between neighborhoods, suggesting that quality varies between neighborhoods (See Table 10). The ICC also determines the appropriateness of using a multilevel model. This ICC value provides empirical support for the use of HLM to analyze these data.

Research question two – Does provider education impact classroom quality when controlling for type of classroom?

Within-neighborhood (level 1) HLM models explore how classroom level variables (i.e., childcare provider education and type of classroom) are associated with classroom quality. The focus in this model is the random effect of childcare provider education on classroom quality, adjusted for type of classroom. Childcare provider education is considered a "random" effect because it has been allowed to vary between neighborhoods. Results show no effect of childcare provider education on overall classroom quality ($ES = .02$, $p > .73$). Information from this model is displayed in Table

11. Childcare provider education does not vary in explaining classroom quality across neighborhoods, as is shown at the bottom of Table 11. The insignificant chi-square statistic ($p > .50$) suggests that the effect of childcare provider education on classroom quality does not vary between neighborhoods.

Between-Neighborhood HLM Model on Quality

Research questions three & four – Does neighborhood poverty impact classroom quality? Does the impact of provider education on classroom quality vary as a function of the neighborhood?

The results displayed in Table 12 represent the final between-neighborhood (level 2) HLM model, which examines differences between neighborhoods. In regard to research question 3, neighborhoods with greater percentages of poverty have classrooms with higher quality ($ES = 1.52$, $p < .10$). The magnitude of the effect, although insignificant by traditional standards, suggests a substantive link between neighborhood and classroom quality. The consideration of significance above $p=.05$ and below $p = .10$ has been used in other research using HLM (Lee, Loeb, & Lubeck, 1998). Additionally, the use of "substantive significance" has been suggested by some researchers (Cohen & Cohen, 1983; Rosenthal & Rosnow, 1984). The results suggest that neighborhood poverty has a direct influence on classroom quality. Classrooms in neighborhoods with a higher percentage of poverty had higher levels of quality.

In regard to research question 4, results were insignificant ($ES = .03$, $p = .92$). There was no influence of neighborhood poverty on the impact of childcare provider education on classroom quality. This is consistent with the previous finding which found no effect of childcare provider education on classroom quality at level one. The impact of

childcare provider education on classroom quality does not vary significantly by neighborhood. Thus, there is not sufficient variability in the impact of childcare provider education on classroom quality that can be explained by the poverty variable.

Regression Analyses

Given the findings that childcare provider education was correlated with two subscales of the ERS, regression analyses were performed to determine if any relationship between childcare provider education and neighborhood poverty would be found when aggregating the neighborhood poverty data. Given the results of the correlation analyses, two separate regression analyses were performed with Space and Furnishing scores as one outcome and Activities as another outcome. For the Space and Furnishing regression, type of ERS measure used was entered into block 1 as a control variable. Childcare provider education and neighborhood poverty were entered in block 2. Analyses revealed that neighborhood poverty did not add any significant variance to the models and was therefore dropped from further analyses. When controlling for type of classroom, childcare provider education level explained a significant proportion of the variance in Space and Furnishing quality ($R^2 = .12$, $p < .01$; See Table 13). The regression analysis performed with activities only included preschool classrooms, so type of classroom was not included as a control in this model. When entered together in the model, childcare provider education and neighborhood poverty did not explain a significant proportion of the variance in Activities within the classroom (See Table 14).

Conclusion

In sum, results from these analyses reveal that what contributes to classroom quality is a complex question. It does not appear from these findings that childcare provider education alone contributes to classroom quality. However, education is related to a few specific aspects of the classroom, such as space and furnishings and activities. Additionally, categorical analyses of childcare provider education revealed that quality was highest in classrooms in which the lead childcare provider had an AA or a CDA.

Neighborhood poverty was positively related to classroom quality. Classrooms located in higher poverty neighborhoods had higher quality classrooms than those located in less impoverished neighborhoods. There was no differential impact of childcare provider education based on neighborhood poverty. Further analyses which examined other structural features of the classroom suggested that higher staff child ratios are related to higher classroom quality, and that childcare providers with more education are more likely to teach in classrooms with lower staff: child ratios and higher enrollment. These findings suggest that multiple factors should be considered when examining what contributes to classroom quality.

Chapter V: Discussion

The early childhood field has a legacy of promoting the development of young children from low-income backgrounds. Substantial research has documented that providing high quality child care to young children from impoverished backgrounds can compensate for their development-compromising environments. A key question for the field is what factors are essential to maintain quality in the child care these children receive. For example, despite the conflicting evidence about the import of childcare provider education for child care quality (Early, et. al, 2007), it may be that more educated childcare providers are essential to maintain the quality in programs situated in impoverished neighborhoods.

To this end, the purpose of the current study was to examine the influence of childcare provider education and neighborhood poverty on childcare classroom quality and to determine whether these variables interact to impact classroom quality. The findings from this study have many implications for the research on childcare provider education and neighborhood poverty, as well as for policies and practices aimed at improving childcare quality. I begin this chapter with theoretical implications of the research, followed by a review of the major findings, considered in the context of extant literature. I then discuss study limitations and future research directions, and finally relevant policy and programmatic implications.

Theoretical Implications

The current study has many implications from a theoretical perspective. This was the first study which was designed to examine how broader ecological contexts influenced the childcare classroom. Guided by Bronfenbrenner's ecological theory, I

examined how neighborhood poverty, a characteristic of both the micro and exo-systems, interacted with provider characteristics, a microsystemic variable, to influence classroom quality. This study was limited in that it did not include individuals' perceptions of these environments. However, it does provide a basis for future contextual research. Bronfenbrenner proposed that multiple systems interact to influence the individual. In this case, multiple characteristics of these systems were examined to see how they influenced another context experienced by most children in the United States: the childcare classroom. Similarly, in accordance with Sampson's (1992) adaptation of Social Disorganization Theory, features of the neighborhood can impact the resources of the neighborhood, to then influence social capital, and ultimately impact development.

I found that features of both the neighborhood and the classroom impacted classroom quality. Neighborhood poverty was positively related to classroom quality. This suggests that features of the neighborhood influence individual classrooms. Although the specific pathway through which poverty impacts the classroom could not be determined through this study, the relationship between these variables supports Bronfenbrenner's view that distal factors can be influential. From a theoretical perspective, an individual's perception of poverty might be a possible pathway through which the classroom is impacted. Providers' perceptions of the neighborhood might influence how they use resources in their neighborhood, or influence their mental health and in turn, impact the quality of the classroom. Childcare providers who perceive their work environment to be impoverished may use different strategies within the classroom. Investigators have found evidence that individuals' perceptions of neighborhood disorder can influence mental health (Latkin & Curry, 2003). The stresses associated with working

in an impoverished neighborhood that one perceives to be disadvantaged may contribute to overall mental health, and could also impact behaviors. Examining how poverty influences individual classrooms as well as individuals within the classroom supports both Bronfenbrenner's and Social Disorganization theories.

Within the microsystem of the classroom, structural features were also related to classroom quality. Staff: child ratios were positively correlated with classroom quality. More staff in relation to fewer children was related to higher quality classrooms, suggesting that this feature of the microsystem influenced quality. In this case, proximal features of the classroom were associated with childcare quality. Although these were the structural features examined within the current study, other proximal variables could also impact the classroom directly. For example, other providers within the classroom, such as assistants and aides, and their behaviors and interactions could also directly impact the quality of the classroom.

Additionally, neighborhood poverty was related to resources within the classroom, which is in alignment with Social Disorganization Theory. Classrooms in more impoverished neighborhoods had more staff members in the classroom than those in less impoverished neighborhoods. It is possible that particular resources available to these neighborhoods allowed for these classrooms to have greater support in hiring staff. Thus, consistent with Sampson's (1992) proposition, social capital in the childcare ecology may mediate how neighborhood poverty is related to classroom quality.

These findings show the importance of considering both micro and exo-systemic factors when examining classroom quality. Both Ecological and Social Disorganization theories highlight the importance of the relationships between proximal and distal

contexts for individual development. In this case, these theories provide a framework for understanding the influence of ecological factors on the context of the classroom. Although many other features of these systems could be considered, including the specific pathways from neighborhood to classroom quality and perceptions of these contexts, this study marks an important step in examining the issue of childcare quality from an ecological perspective.

Childcare Quality

As expected, there was a wide range of quality in the classrooms studied. Despite this variability, overall the quality of care observed was low. The quality scores in this study were considered just above "minimal" and were over a full point below "good" care according to the ERS. These findings are in accordance with evidence from larger studies, which suggests that the quality of childcare in the United States is mediocre at best (Cost, Quality and Outcomes Study Team, 1995; Peisner-Feinberg & Burchinal, 1997). Given the vast literature on the benefits of high quality care, the low level of care provided in these classrooms is somewhat concerning. Fortunately, the programs that participated in the study are part of a larger quality improvement initiative. Since baseline data were collected, these programs have had access to various services to improve quality.

Analyses were also conducted to examine other structural indicators of quality and their relation to provider education, poverty, and classroom quality. Overall, staff: child ratios in the classrooms observed were considerably higher (i.e., more staff to fewer children) than what has been reported in a large scale examination of state policies regarding childcare (Rigby, Ryan, & Brooks-Gunn, 2007). On average, classrooms in this

sample had a ratio of approximately 1 childcare provider to every 4-5 children enrolled and present in the classroom, as compared to other researchers who have reported an average of 1 childcare provider to every 11 children (Rigby, Ryan, & Brooks-Gunn, 2007). Pennsylvania licensing requirements state that for infant rooms a staff: child ratio of 1:4 must be maintained, and for older preschoolers the staff: child ratio required is 1: 10. It appears the classrooms in this study were meeting the state regulations and in many cases exceeded state regulations and recommendations from child serving organizations (American Academy of Pediatrics, 2002). Additionally, ratios were related to overall classroom quality. Classrooms with higher staff: child ratios had higher quality than those with lower staff: child ratios, particularly in infant and toddler classrooms. This is in accordance with literature that documents that better staff: child ratios are linked to higher classroom quality (Goelman, Forer, Kershaw, Doherty, Lero, & LeGrange, 2006). The ratio findings are particularly relevant to infant-toddler classrooms, given that the intensity of infant needs requires that a much higher number of staff is available to provide even custodial care (Lally, Griffin, Fenichel, Segal, Szanton, & Weissbourd, 2003).

Preliminary analyses comparing infant/toddler and preschool classrooms yielded other important findings regarding quality. Previously, researchers have demonstrated that overall childcare classroom quality is low, and that the quality of infant/toddler classrooms is even lower than the quality of care in early childhood classrooms (Cost Quality and Outcomes Study Team, 1995). However, I found no differences between the quality of care in infant/toddler and early childhood classrooms. This may be due to differences between the current study sample and the Cost Quality and Outcomes (CQO)

sample. Specifically, in the present study, group sizes were lower and staff: child ratio in this study was higher than what was reported in the CQO study (Piesner-Fienberg & Burchinal, 1997). These structural measures have been linked in multiple studies to classroom quality (Goelman, Forer, Kershaw, Doherty, Lero, & LeGrange, 2006). The better structural quality overall in the current sample may explain the lack of difference in quality among infant / toddler and early childhood classrooms as compared to the CQO study.

Although there was no difference in the quality of care between infant/toddler and early childhood classrooms, there was a difference between childcare providers' education in these classrooms. In early childhood classrooms, childcare providers had higher education than in infant/toddler classrooms. Similarly, other studies which examined provider education have documented that infant/toddler classrooms tend to be staffed by child care providers with lower levels of education (Cost Quality and Outcomes Study Team, 1995).

Because scholars have demonstrated that childcare providers' education solely does not predict quality, it is not surprising that quality was not different between infant/toddler and early childhood classrooms, despite differences in childcare provider education. Most of the centers studied had a combination of both infant/toddler and early childhood classrooms, although there were fewer infant/toddler rooms. The lack of difference in quality may be due to the characteristics of this particular sample of centers, and their overall service philosophies. Participating centers in this study applied to be part of a quality improvement initiative. It is possible that the directors of the programs have a belief in quality improvement and hire childcare providers who share this belief,

regardless of the type of classroom in which the childcare provider is placed to teach. Further, the directors of these programs may monitor and support childcare providers to deliver childcare services in a quality manner, regardless of their education.

Childcare Provider Education and Classroom Quality

A key question examined in this study concerned the influence of childcare providers' education on classroom quality. The level of childcare provider education had no direct influence on classroom quality when controlling for type of classroom. This is consistent with more recent literature in which researchers have found that childcare providers' education is not related to classroom quality (Early, Bryant, Pianta, Clifford, Burchinal, Ritchie et al., 2006; Early, Maxwell, Burchinal, Bender, Ebanks, Henry, et al., 2007).

Researchers have reported that the link between education and classroom quality is tenuous at best. Some investigators have suggested a positive relationship between provider education and classroom quality (Phillipsen, Burchinal, Howes, & Cryer, 1997; Zill et. al., 2001). However, more recent meta-analyses do not support this relationship (Early, et. al., 2006, Early, et. al. 2007). Most often when complex statistical analyses are used (Early et. al., 2007) and other variables are included, such as ratios and state regulations (Phillips, Mekos, Scarr, McCartney, & Abbott-Shim, 2001), the relation between education and classroom quality disappears. This suggests that simple correlations between education and classroom quality are most likely due to relationships between other features of the classroom, not specifically a childcare provider's education. The use of HLM in this study may to some extent explain why no relation was found between education and classroom quality. The use of HLM and other more advanced

statistical techniques often account for more error than other statistical tests. For example, HLM accounts for the nesting of variables (i.e. classrooms within centers). In regression techniques, data from one center are attributed to all classrooms in that center, resulting in an over-representation of the center data and more error. HLM controls for this nesting data, thus reducing error usually found in regression analyses.

Based on the findings from the current and other studies (e.g., Early et al., 2007), childcare provider education may not be a variable which is directly related to classroom quality. Other features of the classroom, such as the curriculum used, the classroom physical environment, parental involvement, staff: child ratios, and group size have been related to classroom quality, and may be more important for childcare quality than childcare provider education (Layzer & Goodson, 2006). Further, other characteristics of the childcare provider may be more influential regarding classroom quality, such as her experience, her mental health, and her capacity to engage in reflective practice (LoCasale-Crouch, Konold, Pianta, Howes, Burchinal, Bryant, et al., 2007; Pianta, Howes, Burchinal, Bryant, Clifford, Early, et al., 2005).

Despite the lack of findings regarding childcare provider education and overall quality, a relation was found between provider education and other structural measures of quality, specifically staff: child ratios and classroom enrollment. Childcare providers with higher education were in classrooms with lower staff: child ratios (i.e., fewer childcare providers: more children) and in classrooms that had higher enrollment than were childcare providers with less education. Researchers have demonstrated that higher staff: child ratios and small group sizes are beneficial for classroom quality and for children (Goelman, Forer, Kershaw, Doherty, Lero, & LeGrange, 2006; NICHD ECCRN, 2000b).

Still, childcare providers must incorporate input from a variety of areas such as state regulations, practical business needs, staff, and parents (Blau, 2000). This variety of input must be balanced and may sometimes result in larger group sizes than what researchers would consider ideal. More educated childcare providers may be given these less than ideal assignments because they have the credentials to handle larger group sizes with fewer staff members in the classroom. There could be differences in the type of classrooms in which educated childcare providers work, which could interact with education to lead to the null findings about the effect of childcare provider education on classroom quality.

Although a relation between childcare provider education and overall global classroom quality was not documented, correlations were found between childcare provider education and the space and furnishings subscales of the ITERS and ECERS-R. This subscale assesses features of the classroom including wall displays, furnishings, and physical set-up of the classroom, such as placement of learning centers. It is possible that childcare providers with more education have been taught some of the concrete content knowledge that would lead to changing the physical space of the classroom, for example, placing displays for children at the child's eye level and arranging learning centers so as not to interfere with one another.

Another positive correlation was found between childcare provider education and activities, but only in early childhood classrooms. Thus, infant/toddler childcare providers, who had higher levels of education, did not provide higher quality activities for participant children. Developmentally appropriate infant care is distinctly different from care for early childhood (Lally, Griffin, Fenichel, Segal, Szanton, & Weissbourd,

2003), yet many education programs provide training for early childhood but little preparation for infant/ toddler care (Fromberg, 1999). Childcare providers with higher education may lack the preparation for structuring higher quality activities in an infant/toddler setting.

On the other hand, in early childhood classrooms, childcare providers who had higher education had higher scores on activities, such as art, music, blocks, and dramatic play, than childcare providers with less education. As with the use of space and furnishings, early childhood childcare providers with higher levels of education may have had training in content knowledge which would help them to provide appropriate activities in early childhood classrooms. Researchers have suggested that preparation programs may provide content knowledge for childcare providers, but may be lacking in other areas (Early et. al., 2007). This content knowledge would be beneficial in helping childcare providers structure their classrooms and activities, but may not be as useful in teaching them appropriate ways of interacting with children. These findings indicate that childcare provider education may be related to specific features of the classroom but not overall quality. Additionally, whereas global measures of quality provide an overall measure of the classroom environment, they may be lacking in their ability to recognize finer relations between education and specific aspects of the classroom.

Although there is still conflict in the literature, findings from this study are consistent with findings from the large meta-analyses of the childcare provider education literature, in that no direct link between education and quality was found. There are many possibilities for the absence of a link between childcare provider education and classroom quality in this study, and in the large meta-analyses of the literature. For example,

specialization of education, the quality of education childcare providers' receive, supportive staff within the center, and turnover in childcare settings are topics receiving increased attention in the literature, as they may interact with provider education to impact classroom quality. Although this study was not able to address many of these issues, they merit discussion here, particularly as a way to explain the lack of findings regarding childcare provider education and classroom quality.

Recently, investigators have emphasized a consideration of the specialization of childcare providers' education and its relation to classroom quality. Some researchers have found that childcare providers with specialized education in child development or early childhood education are more sensitive and responsive, less punitive, and more involved with children than those without specialized education (Arnett, 1989; Howes, Whitebrook & Phillips, 1992; Wilcox-Herzog, 2002). Nevertheless, researchers conducted a meta-analysis of the childcare provider education literature and reported that there were no differences in quality between childcare providers with a BA in early childhood and childcare providers with a BA that was not specialized in early childhood (Early, et. al., 2006). In another review of the childcare provider literature, investigators found inconsistencies across studies relative to the link between specialization of education and classroom quality (Early, et. al., 2007). In the current study, lack of data on specificity of childcare provider education did not allow for comparisons of childcare providers with specialized education and those without. Given the trends in recent research, the specialization of the education of the childcare providers in this study may have been a more potent predictor of quality than their general level of education.

Although there has been research examining specialization of education, to date no research exists which looks at the quality of education childcare providers receive. Most research examining childcare providers' education levels asks childcare providers to report their highest level of education received, yet there is no follow up to determine what coursework might have been taken, how well childcare providers performed in their courses, and any investigation of the quality of the education provided. It is possible that childcare providers with the same degree may have had very different course requirements, quality of instruction, and performance. Recently investigators have suggested that some childcare provider education programs may be lacking in quality (Cochran-Smith & Zeichner, 2005).

Further, other researchers have found that building a trusting, respectful relationship between childcare providers and children is essential for learning in early childhood (Pianta, 1999). It has been suggested that whereas childcare provider preparation programs may provide content knowledge, they may not provide support and scaffolding for forming these important trusting relationships (Early et. al., 2007). Therefore, by combining all childcare providers with the same degree or years of education together, some of the variability in individuals' educational experience and skill level is lost. The lack of data on childcare providers' educational background and skill regarding the childcare provider-child relationship may offer some explanation for why the direct impact of childcare provider education on classroom quality was not found in this study, and in recent meta-analyses.

Another explanation for the lack of findings between childcare providers' education and classroom quality may relate to whether a childcare provider can

effectively implement what she has gained from her training within her environment. It has been suggested that childcare providers may not have sufficient support to effectively teach what they have learned in their education programs (Early et. al., 2007). This could be due to multiple factors. The pressures and stresses of teaching may compromise an individual's ability to deliver the quality services she might know are appropriate from her training. Childcare providers may not have the resources within their centers, such as mentoring or coaching, or supportive staff or aides within the classroom, which can help them to reflect on their practice, cope with stress, and find new ways to teach effectively.

In this sample, there were on average two childcare providers within the classroom, however, only the lead childcare providers were surveyed. It is quite possible that characteristics of the assistant childcare provider in the classroom, and the relationship between the childcare providers contributed to the lead childcare provider's effectiveness within the classroom. The study's observational measures included all adults who interact within the classroom, not specifically the lead childcare provider. Thus, quality ratings were based on more than the lead childcare providers' interactions. Nevertheless, the current and other studies of childcare provider education focused specifically on the lead childcare provider in the classroom and did not survey any characteristics of the assistants in the classroom (Burchinal, Cryer, Clifford, & Howes, 2002; Howes, 1997; Scarr, Eisenberg, Deater-Deckard, 1994). Studies that have examined assistant childcare provider qualifications typically reported that assistants or aides in the classroom have lower levels of education and specialized training than lead childcare providers (Ceglowski & Davis, 2004; Howes, Whitebook, & Phillips, 1992). Lead childcare providers may have difficulty implementing effective teaching practices

when contrasting teaching practices are displayed by other staff in the classroom who may lack appropriate training.

Although there was no direct influence of childcare provider education on classroom quality, follow-up analyses yielded differences in quality based on categorical groupings of education. Based on previous research, childcare providers were categorized regarding their level of education (Burchinal, Cryer, Clifford, & Howes, 2002; Howes, 1997; Scar, Eisenberg, Deater-Deckard, 1994). Specifically, childcare providers were grouped in the following categories: 1) having some high school/high school diploma; 2) Associates Degree / CDA (preliminary analyses revealed no difference between these groups originally, so for further analyses they were combined); and 3) Bachelor's degree / higher. Classroom quality was highest in classrooms in which childcare providers had an AA/CDA. It may be that childcare providers in AA/CDA programs have the opportunity to focus intensively on the developmental needs of and classroom practices for young children, which in effect gives them the specialization of education that has been found to be related to child care quality (Howes, Whitebook, & Phillips, 1992). Additionally, childcare providers who attend AA/CDA programs are often residents of impoverished communities themselves (Musick & Stott, 2000), and may have the capacity to utilize the resources of their communities in a way that promotes classroom quality in these neighborhoods.

A related finding was that there was no difference in quality between classrooms in which childcare providers had a BA and classrooms in which childcare providers had High School or less education. These findings seem counterintuitive, in that the highest degree did not have the highest quality, yet there is some limited support in the literature

for this finding. For example, the Family and Childcare Experiences Study (FACES) found that childcare providers with a Bachelor's degree had lower quality classrooms than childcare providers without a BA (Early, et.al. 2007).

An explanation for these findings may be found in the child care workforce turnover literature. The childcare workforce has one of the highest rates of turnover of any profession in the country (Whitebook, Sakai, & Howes, 2004). One of the commonly cited reasons for leaving the childcare profession is the attainment of more education (Todd & Deery-Schmidt, 1996). Still, there is a population of childcare providers with higher degrees who remain in the field. There may be differences between the childcare providers with higher education who stay in childcare and those who leave for different jobs. An examination of the differences in childcare providers with advanced degrees who remain in childcare and those who leave might yield information about their classroom performance which helps to explain the complex relationship between education and quality. Other characteristics of the childcare providers, such as years of experience, mental health, and wages, might contribute to the departure of certain highly educated childcare providers while others stay in the field.

There is support in the literature that low wages, work environments that lack other qualified staff, and little opportunity for advancement are strongly related to childcare provider turnover (Phillips, et. al., 2000; Whitebook & Sakai, 2003; Whitebook, Sakai, & Howes, 2004). However, there is a lack of research on how these variables interact with childcare providers' educational and skill levels and other characteristics to influence turnover.

Neighborhoods, Poverty, and Childcare Quality

Findings from the current study were that childcare quality varied by neighborhood. This is consistent with the literature which has found that there is variability in childcare quality across geographic regions (Fuller, Kagan, Loeb, & Chang, 2004). Researchers have documented that there is variability in quality by large geographic regions, such as cities (Fuller, Kagan, Loeb, & Chang, 2004), as well as by smaller regions like zip-codes and neighborhoods (Fuller & Liang, 1996). The variability in quality within one city suggests that parents may have access to a variety of centers that range in quality within a small area. Some of the centers included in this study were very close geographically, but still fell within different census block groups with different levels of poverty.

According to Social Disorganization Theory, community factors may facilitate or inhibit the creation of social capital (i.e., parenting, childcare quality); it is through this path that individuals are impacted by neighborhood variables (Sampson, 1992). The variability in quality found in this study implies that centers are differentially impacted by the communities which surround them. It is possible that these centers may have had access to different resources in the neighborhood, but also chose to use them in different ways. Sampson (1992) suggests that neighborhood poverty alone does not impact child outcomes, but that one way poverty impacts outcomes is through parenting practices. Similarly, neighborhood poverty may impact classroom quality through the ways people within the center (i.e., childcare providers, directors) react to and interact with resources (or the lack thereof) within the neighborhood.

This is particularly relevant to the current study, which examined a sample with high rates of poverty. There was a wide range of poverty in the neighborhoods; neighborhoods ranged from only 1% to fully 100% of people in the neighborhood living below the poverty line. Despite this variability, the proportion of people living in poverty in the sample neighborhoods was much higher than the national average. Within the neighborhoods of the childcare centers in this sample, the average percentage of people living below the poverty line was 32.5%, compared to the national percentage of people living below the poverty line of 12.5% in 2003 (DeNavas-Walt, Proctor, & Smith, 2006). The high percentage of people living below the poverty line is concerning considering the negative effects of poverty on child development (Kowaleski-Jones, Dunifon, & Ream, 2006; Morales & Guerra, 2006).

A key finding from this study was that poverty had a direct impact on classroom quality. Specifically, classrooms located in higher poverty areas had higher quality classrooms. This finding conflicts with some research that shows childcare quality is lowest in high poverty areas (Helburn, 1995; Loeb, Fuller, Kagan, & Carrol, 2004). In contrast, other research has suggested a positive relation between child care quality and neighborhood poverty. For example, researchers have documented a curvilinear relationship between neighborhood socioeconomic status and childcare quality (Fuller, et al., 2004; Fuller, Raudenbush, Wei, & Holloway, 1993). Low and high poverty areas have been found to have higher quality child care than middle class neighborhoods.

On its face, this finding of a positive impact of poverty on childcare quality seems contrary to the documented negative effect of poverty on child development. America's history of developing and sustaining quality early childhood programs in impoverished

communities (Zigler & Styfco, 1995) helps to clarify why both these processes may occur. Specifically, centers located in poor neighborhoods may have access to additional sources of funding and other resources, which may lead to better quality. For example, Head Start and Early Head Start centers receive funding aimed at providing high quality childcare and support for families who live in poverty (Administration for Children and Families, 2008). Additionally, researchers have found that in impoverished neighborhoods, there are more publically funded childcare facilities than privately funded facilities (Small & Stark, 2005). There is some evidence that centers serving high-poverty areas may have access to more public funds and subsidies that could give these centers access to better resources (Fuller, Kagan, Loeb, & Chang, 2004).

It is important to note that the sampling process utilized for this study may have *a priori* contributed to the findings regarding the impact of poverty on quality. Given that one of the inclusion criteria for centers participating in the larger study was serving 50% or more children receiving subsidies, it is also possible that they were receiving other sources of funding as well. Additionally, the centers in this study applied to be part of a quality improvement initiative, which would allow them to receive aide and support to promote quality. These centers may have also sought out additional funding sources to improve quality.

Early intervention research has pointed to the benefits of high quality care for young children living in impoverished neighborhoods (Lee, 2005). Childcare has been documented to be a protective factor for these children (Caughy, DiPeietro, & Strobino; Connell & Prinz, 2002; Spieker, Nelson, Petras, Jolley & Barnard, 2003; Votruba-Drzal, Coley & Chase-Lansdale, 2004). Providing higher quality care in impoverished

neighborhoods is important, considering the research which shows a wide range of benefits of a high quality childcare environment for children living in poverty (Caughy, DiPeietro, & Strobino; Connell & Prinz, 2002; Spieker, Nelson, Petras, Jolley & Barnard, 2003; Votruba-Drzal, Coley & Chase-Lansdale, 2004). Particularly, early interventions in childcare settings designed for children living in poverty have proven to be effective in improving children's cognitive skills and reducing their behavior problems (Lee, 2005).

Two large scale preschool interventions, the Abecedarian Project and the Perry Preschool Project, were designed specifically to provide children in impoverished settings with high quality childcare as a means to impact later development. Both of these interventions yielded positive results for children including higher scores on intelligence and academic tests, reduced grade retention, attainment of more years of education, and reduced rates of teenage pregnancy (Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Schweinhart, Barnes, & Weikart, 1993). The benefits of these intervention projects persisted well into the adult years, demonstrating that early intervention in childcare settings can have lasting effects for children. In the current study, childcare quality was higher in neighborhoods that were more impoverished. Considering this finding in the context of data from longitudinal evaluations of high quality preschool programs, it may be that children who live in poverty may have access to higher quality care and the long-term benefits that may accrue from experiencing this level of intervention.

Beyond global quality, the relation between poverty and child care quality was assessed by examining structural indicators of quality. Specifically, a positive correlation was found between poverty level and number of staff present in the classroom.

Classrooms in higher poverty areas had more childcare providers present in the classroom on the day of observation. It is possible that centers in high poverty areas receive funding which allows these centers to hire more staff than centers who do not receive financial support. Having more staff in the classroom may allow childcare providers to provide more individual attention to children and manage the classroom more effectively than having fewer childcare providers in the classroom (Phillips, Mekos, Scarr, McCartney, & Abott-Shim, 2000; NICHD ECCRN 1996; 2000a).

Poverty was not related to staff: child ratios directly in this sample. Some researchers have examined differences in structural indices of quality such as staff: child ratios between high and low poverty neighborhoods, yielding conflictual findings. For example, there is some evidence that staff: child ratios are higher in centers serving poor families (Fuller, Raudenbush, Wei, & Holloway, 1993) and in low-income centers (Phillips et. al., 1994). In contrast, researchers have reported a lack of differences in staff: child ratios across different levels of neighborhood poverty (Fuller, Holloway, Bozzi, Burr, Cohen, & Suzuki., 2001; Fuller & Liang, 1996). These latter findings are consistent with the results of the current study, suggesting that, perhaps due to state regulations, there is no difference in staff: child ratios based on variation in the socioeconomic status of the neighborhoods surrounding child care centers.

In addition to the relationship between poverty and overall classroom quality, a positive correlation was also noted between poverty and the Parents and Staff / Adult Needs subscales of the ECERS-R and ITERS. Higher neighborhood poverty was related to higher scores on items such as provisions for parents, opportunities for professional growth, and adult personal and professional needs. This relationship would indicate that

classrooms in more impoverished neighborhoods had better communication strategies in place for parents, as well as offered more support to staff to continue their professional development, and to meet staff's personal needs. This is encouraging in light of research which suggests that professional development, such as work-shop training for childcare providers, can lead to increases in classroom quality (Blau, 2000). Childcare centers located in impoverished neighborhoods may have access to funding that allows for professional development of childcare providers, which may also be related to higher levels of quality overall.

Scholars have examined a parallel body of research and have documented that neighborhood poverty has a direct impact on children over and above family characteristics such as parenting and family socioeconomic status (Caughy & O'Campo, 2006; Duncan, Brooks-Gunn, & Klebanov, 1994 Kowaleski-Jones, Dunifon, & Ream, 2006). The results of the current study were that neighborhood poverty had a direct impact on classroom quality. It is possible that childcare may be a pathway through which the impact of poverty on children is attenuated. Extant literature from various scholars supports the notion that high quality childcare is especially beneficial for children in poverty (Caughy, DiPietro, & Strobino,1994; Connell & Prinz, 2002; Spieker, Nelson, Petras, Jolley & Barnard, 2003; Votruba-Drzal, Coley & Chase-Lansdale, 2004). The findings from this study suggest that children in poverty may have access to high quality care. Although information on children in the classrooms was not collected, specifically whether or not these children came from the neighborhoods where the center was located and their level of developmental functioning, evidence from the current study

provides some support for the argument that childcare can serve as a protective factor for children who live in poverty.

Childcare Provider Education and Classroom Quality in Impoverished Neighborhoods

The major research question examined in this study was the effect of the "interaction" between childcare provider education and neighborhood poverty on classroom quality. This question was designed to examine if childcare providers' education would matter more for classroom quality in certain neighborhoods. There was no impact of childcare provider education on classroom quality as a function of the neighborhood. In other words, childcare provider education had no impact on classroom quality, regardless of the poverty of the neighborhood in which the classroom was located.

Researchers have presented a large body of research which shows childcare is beneficial for children at risk and in impoverished circumstances (Caughy, DiPeietro, & Strobino; Connell & Prinz, 2002; Spieker, Nelson, Petras, Jolley & Barnard, 2003; Votruba-Drzal, Coley & Chase-Lansdale, 2004). In other words, high-quality childcare can be perceived as compensatory for children from impoverished backgrounds. Although this study did not measure child outcomes, it was designed to be informative about what factors contributed to the enhancement of the quality of childcare in impoverished neighborhoods. Stemming from the investigators of neighborhood literature who suggest that community resources may be lacking in impoverished areas (Estabrooks, Lee, & Gyuresik, 2003), I thought that childcare providers with more education would have the skills necessary to compensate for a lack of resources in the

community and to provide better quality care despite the challenges of working in an impoverished setting. That idea was not supported by the results of the current study.

There are a variety of possibilities for why the "interaction" between childcare provider education and neighborhood poverty was not found. As stated previously, a closer examination of other facets of the overall classroom in relation to the lead childcare provider is needed, such as the role of teaching assistants, group sizes, and ratios. These variables would be especially important to consider in relation to neighborhood poverty as well. The finding that neighborhood poverty was positively related to classroom quality might indicate that these centers are getting support from other areas, such as subsidies, to support childcare providers, regardless of their education. Support may be provided simply by employing more childcare providers in the classroom. As I reported in this study, centers in impoverished areas had more childcare providers in the classrooms than in less impoverished areas. Additionally, centers in more impoverished areas had better provisions for staff in their centers, such as providing professional development opportunities. Formal education may not interact with poverty to impact classroom quality, but more informal, in-service training experiences that childcare providers receive might be more prevalent in centers in impoverished neighborhoods, and be more related to classroom quality.

I suggested that education might matter more in impoverished communities because childcare providers with more education would have the skills necessary to handle working in stressful and inadequate settings. To some extent, this notion was based on researchers who have shown that the negative effects of poverty on the family experiences and outcomes of children were mediated by characteristics of the parent,

such as education (Pinderhughes, Nix, Foster, Jones, & The Conduct Problems Prevention Research Group, 2001). As the current research revealed, however, quality was higher in the impoverished settings, suggesting that more education may not be needed when adequate support and provisions are in place in the center, even though it is in an impoverished neighborhood. A lack of resources and poor working conditions have been cited as reasons for increased levels of childcare provider stress (Kyriacou, 2001), which could lead to compromised teaching. Because of the increased resources and staff available to childcare programs in impoverished neighborhoods in this sample, childcare provider education in and of itself may not be as important in these low-income settings.

Although quality was higher in impoverished neighborhoods, it is possible that childcare provider education preparation programs are not providing adequate training to deal with some of the stresses or challenges that come with educating young children, regardless of the neighborhood in which childcare providers work. Recently, researchers have suggested that the quality of childcare provider education programs may be lacking (Cochran-Smith & Zeichner, 2005) and that programs may be effective at communicating content knowledge but not other skills needed to teach effectively (Early, et. al., 2007). These programs may not prepare childcare providers on practical ways to use resources in the community to enhance their teaching.

For example, childcare programs located in impoverished neighborhoods may have access to certain resources which could enhance quality, such as libraries. If childcare providers are not prepared in their education programs on how to access these resources, they may go unused. Conversely, childcare classrooms in high poverty areas may have resources available of compromised quality, such as dilapidated parks for gross

motor play. Childcare providers may not have been educated on how to handle these challenges, for example how to set up gross motor activities in creative indoor spaces. Although childcare providers may have more education, the lack of practical skills to work with the resources (good or bad) available may hinder the quality of the childcare classroom.

It is important to reiterate that the centers included in this sample all applied to be part of a quality improvement initiative. Directors who applied demonstrated a belief in improving quality in their centers, which may have affected their hiring processes and decisions. These directors may have recruited childcare providers who also shared a belief in improving quality and improving the center, regardless of their educational level. In order to apply to be part of Early to Learn (E2L), directors had to undergo a lengthy application process and agree to a large intervention and multiple assessments of their centers. The ambition and initiative required for the E2L application may have also led these directors to seek out other resources to increase the quality of their programs, including hiring childcare providers who evidenced a commitment to quality. Although many of these centers were located in impoverished settings, this drive to improve may have counteracted some of the negative influences of the surrounding neighborhoods. Thus, the absence of a link between childcare provider education and quality in these centers in impoverished settings may be due to the idiosyncrasies of this particular sample.

Although an interactive effect of childcare provider education and poverty on child care quality was not found, quality was documented to be higher in more impoverished neighborhoods. In light of investigators' reports that high quality childcare

is especially beneficial for children in at-risk circumstances (Caughy, DiPietro and Strobino,1994; Connell & Prinz, 2002; Spieker, Nelson, Petras, Jolley & Barnard, 2003; Votruba-Drzal, Coley & Chase-Lansdale, 2004), it is encouraging to think that children in poverty may have access to higher quality care which can be beneficial to them. Future research should continue to examine this phenomenon, and what factors might contribute to quality, which is explored in the following section.

Research Limitations and Future Directions

There are some important limitations of the current study that should be addressed, which have implications for future research. A key limitation was the sample bias. First, this sample included a high proportion of centers who were serving children from impoverished backgrounds, thus, the sample was somewhat skewed. Further, the centers included in this sample all applied to part of a quality improvement initiative. This self-selected sample may have included centers with directors who were willing to seek out additional funds and resources to improve quality. Their overall desire to improve quality may set these centers apart from other community based early care environments, a factor which limits the generalizability of the current findings.

Additionally, there were differences in classrooms and childcare providers who were included in the study and those who were excluded. Childcare providers who were excluded from the sample because they could not be matched with classroom data had higher education than those who were matched with classrooms and thus were included. Also, classrooms which could not be matched with childcare provider data had higher quality than classrooms that were included. The reasons these childcare providers could not be matched to classrooms are unknown. Childcare providers could have been new to

the program and possibly not in the classroom at the time of observation. Surveys were distributed after baseline classroom data collection was completed. Centers may have hired more educated childcare providers after baseline data were collected as part of their quality improvement program. Conversely, the lack of childcare provider data from certain classrooms may be explained by turnover of staff. At the time surveys were distributed, some childcare providers who were present during classroom observations may have already left the program or could have declined to answer the survey. The initial differences between classrooms and childcare providers who were included and excluded may have affected the current findings. It is possible that these more highly educated providers might have contributed positively to classroom quality; however, this could not be determined because they could not be matched with specific classroom data. As a result, the overall findings of this study could be skewed.

Although the study variables were distributed normally, there was wide variation in many of the classroom characteristics, including enrollment, children present, and staff present. With so much variance in classrooms, it was difficult to find a general trend in the study variables. This may be attributed in part to combining infant/toddler and early childhood classrooms together for analyses. State regulations for enrollment and ratios vary widely based on the age of children in the classroom, with infant/toddler classrooms usually requiring fewer children enrolled and higher ratios, yet they were combined for the final HLM analyses. Because of this variation, it is difficult to describe a "typical classroom." Future research studies should look at a more refined sample in order to tell a more complete story of a particular type of classroom.

This study used an existing data set which was supplemented by census information. Although the use of secondary data is becoming a common strategy for exploring new research directions (Friedman, 2007), there are some drawbacks with its use in the present study. First and foremost, the study was constrained by the variables available in the data set. In particular, the data did not have information on childcare providers' experience. These data were collected later in the Early to Learn project, but in the first round of data collection, this question was not included in the childcare provider survey. Although some research has found that childcare provider experience is related to classroom quality, findings are conflictual. Some researchers have found that more experience is related to higher levels of classroom quality, but that experience may be mediated by other characteristics of the childcare provider (Kontos & Wilcox-Herzog, 2001; Pianta, et al., 2005). It is possible that childcare providers' experience may interact with their level of education to influence classroom quality. Future research should include these two variables together in order to more fully understand the contribution of childcare providers' characteristics to classroom quality.

Another variable frequently studied in the childcare literature, specifically in regard to education, is specialization of education. Although some researchers have documented a relationship between education specific to early childhood and positive childcare provider behaviors (Arnett, 1989; Howes, Whitebrook & Phillips, 1992), others have not found this relationship (Early, et al., 2006; Early, et al., 2007; Roupp, Travers, Glanz, & Coelen, 1979; Scarr, Eisenberg, & Deater-Deckard, 1994). Future research should examine these issues explicitly, including the quality of the preparation program, childcare provider specialization, and the specific amount of coursework required which

is related to early childhood development. As is suggested by some researchers (Cochran-Smith & Zeichner, 2005), if the quality of preparation programs is lacking, a childcare provider's effectiveness within the classroom may be compromised.

In the current study I could not examine the impact of childcare providers' specialization in relation to classroom quality. This information was asked of childcare providers, but due to low response rates, and the lack of clarity in some of the childcare provider-report questionnaires, the data could not be analyzed. One of the difficulties in this study was that childcare providers were given surveys to fill out on their own time and to return at a later date. Many childcare providers left questions unanswered, or gave unclear answers. Childcare providers were asked an open-ended question about the area of "concentration" and gave a variety of answers which made it difficult to ascertain their areas of specialization. For example, some childcare providers responded that they had a concentration of "education" but made no distinction regarding a specific age group (i.e., elementary, early childhood).

Although it was possible to group childcare providers according to "education-related" concentrations and compare them to those who reported a different concentration (i.e., finance), preliminary analyses revealed that there were too few childcare providers who reported having concentrations other than education to compare these two groups. Additionally, over half of the childcare providers surveyed did not report any concentration. There is no way to determine if these childcare providers chose to leave the question blank, or if they had any specific concentration in their education. Finally, those participants who had a high school diploma or less may not have had an area of

concentration to report, since typically, high schools do not offer “concentrations” or “majors” in the way that higher education programs might.

In addition to studying other characteristics of the lead childcare provider in the classroom, future research should also examine characteristics of other adults within the classroom. Classrooms observed in this study typically had more than one childcare provider in the classroom, however, only the lead childcare providers were surveyed. Many studies of childcare provider characteristics focus solely on lead childcare providers in the classroom and ignore assistants or aides in the classroom. When researchers report information on assistants, they typically find lower levels of education for assistants, than for lead childcare providers (Celglowski & Davis, 2004; Howes, Whitebook, & Phillips, 1992). Some of the conflict in the literature regarding childcare provider education may be attributable to this lack of information on the other childcare providers in the classroom. Future researchers should examine the characteristics and educational backgrounds of all those who interact regularly in the classroom, especially since many observational measures of classroom quality base ratings and scores on behaviors of all childcare providers in the classroom, not just the lead childcare provider.

Given the findings of this study that childcare providers with more education were more likely to be in classrooms with higher enrollment and lower ratios, further examination of how classroom features may interact with education should be considered. The lack of evidence in this study regarding a relation between childcare provider education and classroom quality may be because childcare providers with higher education are placed in classrooms that structurally are harder to manage. Researchers have shown that classrooms with higher ratios are of higher quality than those with lower

staff: child ratios (Burchinal, Roberts, Nabors, & Bryant, 1996; Goelman, Forer, Kershaw, Doherty, Lero, & LeGrange, 2006). Additionally, children in smaller classrooms have better cognitive development than those in larger groups (Burchinal, Roberts, Nabors, & Bryant, 1996; NICHD ECCRN, 2000b). The positive benefits of childcare provider education may be counteracted by larger group sizes, or lower ratios, which researchers have shown impacts quality. Despite their education, childcare providers may not be able to teach effectively when they are in classrooms with too many students or when they do not have adequate support. Further research is needed to understand the other structural features that interact with education to impact classroom quality.

Although childcare providers' education was not related to classroom quality, the finding that quality was highest in classrooms in which childcare providers had an AA or CDA warrants empirical attention. No differences were found between childcare providers with a BA or higher and those with only a high school diploma or less. Researchers have shown that as childcare providers gain more education, they are more likely to leave the profession (Todd & Deery-Schmidt, 1996). Yet, there is a population of childcare providers with Bachelor's and higher-level degrees that choose to stay in childcare. Longitudinal research could examine differences between childcare providers who stay and those who leave childcare.

Additionally, although global measures of quality are most widely used in the literature examining childcare quality, it is important to consider more specific features of the classroom in relation to childcare provider education. This study found that childcare provider education was related to the space and furnishings of the classroom, and in early

childhood classrooms, to activities, but not to interactions. Global measures of quality may not reflect characteristics of the classroom that would be related to more "content" oriented education and training (e.g., enhancing children's pre-literacy skills). Future research should incorporate more specific measures of quality that may be more directly related to childcare provider education, such as the implementation of a "curriculum" and developmentally appropriate practice (Fukkink & Lont, 2007). Additionally, research should examine interactions between childcare providers and children, using measures such as the Arnett Caregiver Interaction Scale (Arnett, 1989). Although the ECERS-R and ITERS do have items which examine interactions, a measure solely designed to examine the relationship between childcare providers and children may provide more in-depth profiles of these interactions and capture features of the relationships that the ERS do not. Other definitions of quality, and measures which are designed to examine other specific features of the classroom, such as content-oriented pedagogy, might be more related to a provider's education level.

Based on the ERS, a key finding of this study was that the overall quality of care provided was relatively low. Considering the benefits of high quality childcare for children, the low level of care provided warrants further empirical attention. For future investigations, researchers should examine more closely what contributes to classroom quality, such as the pedagogical strategies utilized and the classroom environment created. In this study, I examined childcare provider education in particular, and neighborhood poverty. Building on the current findings, researchers should aim future studies toward examining more specific features of childcare providers' education, such as specialization and quality of education, as well as other characteristics of the childcare

provider which might interact with education to impact quality and child outcomes. For example, researchers have suggested that psychological well-being can negatively impact childcare providers' interactions with students (Hamre & Pianta, 2004). Childcare providers who report more depressive symptoms are less sensitive and more withdrawn than childcare providers who report fewer depressive symptoms. It is quite possible that these psychological characteristics interact with education to influence classroom quality, particularly in impoverished neighborhoods that may render childcare providers' experiences more stressful.

Another limitation of the current study was the operationalization of neighborhood poverty using census information. Although the use of census data is widely used in the field of neighborhood effects on human development (Caughy & O'Campo, 2006; Estabrooks, Lee, & Gyuresik, 2003; Fuller & Liang, 1996; Fuller, et al., 2001; Peterson, Krivo, & Harris, 2000), others have suggested that observational measures of neighborhood disadvantage might provide more accurate representations of the neighborhood (Sampson, Morenoff, & Gannon-Rowley, 2002). Census information is not always collected at the time of other data, as was the case in this study. The census information used was from 2000 and baseline data for this study was collected in 2003. There may have been changes in neighborhood poverty levels in the 3 years between when the census information and classroom information were collected. Additionally, the definition of poverty applied by the U.S. Census Bureau does not allow for the examination of the experiences of the "near-poor," who may have decreased availability of child care (Fuller, Kagan, Loeb, & Chang, 2004).

In the future, researchers should strive to address other characteristics of neighborhoods. For example, in this study, there was a very wide range in neighborhood population (i.e., number of persons in neighborhood), which may be related to neighborhood density. The density of the neighborhood may interact with poverty regarding the characteristics and resources of the neighborhoods. Researchers have suggested that crowding in impoverished neighborhoods has a particularly pernicious impact on the experiences of the population (Regoeczi, 2003). Additionally, characteristics of the neighborhood that may be more explicitly related to child care quality (e.g., presence and conditions of playgrounds, libraries, physical surroundings of center) should be investigated.

Although census information does provide a very rich source of data, other techniques of collecting neighborhood data should be utilized. Some have suggested that observing neighborhoods through techniques such as drive-bys may elucidate other variables that interact with poverty to influence outcomes (Sampson, Morenoff, & Gannon-Rowley, 2002). For example, Sampson and Raudenbush (1999) conducted drive-bys to observe neighborhood characteristics and were able to provide observational measures of neighborhood disadvantage beyond just census information on poverty. They rated characteristics such as presence of garbage in the streets, graffiti, presence or absence of adults drinking in public and fighting, and presence or absence of bars and liquor stores on a block. They found that these observational variables were correlated with census gathered information, but that observed measures were also related to survey-reported levels of victimization within neighborhoods. This suggests that observed characteristics of the neighborhood contribute to individual outcomes. Through

observational techniques, child care researchers could delineate the neighborhood variables that are likely to be linked to the experiences of children in these centers (e.g., the presence or absence of parks and playgrounds, the condition of the sidewalks and other areas adjacent to the center).

Similarly, it is also important for researchers to examine individuals' perceptions of the neighborhood. Researchers have reported that individuals' perceptions of neighborhood disadvantage can be related to mental health (Latkin & Curry, 2003). In particular, an individual's perception of neighborhood disorder is related to increases in depression. Other researchers have documented that the relationship between people's perceptions of neighborhood disadvantage and parenting behaviors can be mediated by personality and coping strategies of the parent (Barnes & Cheng, 2006). Parents who perceived their neighborhoods to be disadvantaged but also had adaptable coping strategies and personalities, showed more positive parenting than parents whose neighborhood perceptions were similar but who did not use adaptive coping strategies. From this research it appears that how individuals' view the neighborhood matters for their own mental health, but also interacts with characteristics of the individual to impact behavior.

In light of the research on neighborhood perceptions, researchers should consider the perceptions childcare providers' have about the neighborhood in which they work. If childcare providers view their neighborhood environment as disadvantaged, this may be related to their mental health, which could compromise their ability to effectively teach. However, these perceptions should also be studied in conjunction with characteristics of individual providers, such as personality, coping, and education, to determine if these

characteristics could mediate the impact of perception of neighborhood disadvantage on behavior.

Additionally, the finding that neighborhood poverty was positively associated with classroom quality warrants further empirical attention. It has been suggested that centers in impoverished areas may have access to funding and subsidies that impact the resources they have to improve quality, however, this should be studied empirically. In the future, researchers should include the sources of funding to which centers have access, in order to more fully understand the resources available to these programs. Gathering data from the families in the centers is also important. The socioeconomic status of families may be entirely different from the fiscal status of the child care programs to which they send their children. Measuring poverty at both the micro- (i.e., family) and exo- (i.e., neighborhood) systemic levels is an important step for researchers to take.

An important direction for this type of research is to examine the link between neighborhood poverty, childcare quality, and child outcomes. This study represented a preliminary attempt to investigate childcare quality from a truly ecological perspective, by examining proximal and distal factors which might contribute to quality. In this study I found that neighborhood poverty is directly related to classroom quality. Although researchers have established that neighborhood poverty can have negative influences on child development, some studies suggest that poverty affects children through more proximal processes, such as parenting practices. Further, researchers have shown that neighborhood poverty has been shown to affect children over and above family characteristics such as parenting and family SES (Caughy & O'Campo, 2006; Duncan,

Brooks-Gunn, & Klebanov, 1994 Kowaleski-Jones, Dunifon, & Ream, 2006). Childcare may be one mechanism through which poverty impacts children. Future research including child outcomes could test empirically whether high-quality childcare in impoverished neighborhoods could protect children from some of the adverse effects of living in poverty.

In a similar vein, in the current study, neighborhood poverty was defined by the poverty of the people living within each particular neighborhood. Although this provided some indication of the poverty surrounding each childcare center, I had no information on the poverty levels of the children within each center. It cannot be assumed that the children enrolled in these centers necessarily came from the same neighborhoods. Neither can it be assumed that parents chose childcare based solely on the neighborhood in which they reside. Researchers have suggested that location and proximity to childcare are factors in parental choice of childcare (Harrist, Thompson, & Norris, 2007). Parents may consider factors of the neighborhood, such as perceived poverty or disadvantage in the neighborhood as well as location when considering childcare for their children. This might also factor into parents' perceptions of the quality of care provided. A goal of future research should be to examine neighborhood poverty in conjunction with family poverty and residence of individual children. This would further explain the connection between neighborhood factors and childcare quality, and ultimately child development.

Policy and Program Implications

This research has many implications for policies and programs aimed at improving classroom quality. The current study provides further evidence that the quality of care provided to young children is low to mediocre, which is consistent with results

from larger studies (Cost, Quality and Outcomes Study Team, 1995; Peisner-Feinberg & Burchinal, 1997). Such findings, coupled with the literature which shows high quality care is beneficial for children, have precipitated a variety of child care improvement strategies which are currently being employed throughout the nation (U.S. Department of Health and Human Services, Child Care Bureau, 2004). Many of these initiatives include a childcare provider training / education component (Bryant, Maxwell, & Burchinal, 1999; Fiene, 2002; Roach, Riley, Adams, & Edie, 2005), which could address a variety of childcare provider needs identified by the results in this and other studies.

The design of research and quality improvement programs which address childcare providers could be based on a commonly cited principle of child development. The notion that multiple domains of development are interrelated and work together to influence the development of the "whole child" (Raver & Zigler, 1997; Zigler, 1984; Zigler & Styfco, 2004) could also be applied to childcare providers. Policies should be designed which support not only childcare providers' educational development, but also their mental health and other characteristics. The design of quality improvement programs in the field of child care should be informed by the knowledge that childcare providers' mental health and education can impact their interactions with children. Programs which take these factors into account may facilitate better outcomes for childcare providers, for the quality of classrooms, and ultimately for children.

Additionally, there are initiatives established which mandate higher levels of childcare provider education, in particular Head Start. Before widespread mandates requiring preschool childcare providers to obtain more education are handed down, researchers and policy-makers should examine the issue of childcare provider education

more carefully. The current literature does not support a relationship between childcare provider education and childcare quality in childcare, preschool, and other early childhood classrooms. Until more research can be conducted which examines features of education in combination with other characteristics of childcare providers, policies should not be based solely on education. The selection and training of child care childcare providers should be informed by the evidence regarding what childcare provider characteristics are linked to child care quality, and ultimately to child outcomes.

Policymakers and researchers are striving to find appropriate ways to increase the quality of childcare in this country. One movement that has emerged is the establishment of universal pre-kindergarten as a way to raise the overall standard of childcare for children. Researchers have conducted a meta-analysis of 13 state-funded pre-kindergarten programs and documented that these programs offer many benefits for children, including decreased grade retention later in elementary school and improved academic performance and attendance (Gilliam & Zigler, 2000). However, these authors noted several methodological drawbacks to these studies. For example, there was wide variation between states in the requirements of these programs, such as the level of childcare provider education, which might have contributed to variations in quality across states (Gilliam & Zigler, 2000; Gormley, Gayer, Phillips, & Dawson, 2005). Another limitation noted was a lack of consistent comparison groups, which makes comparing state-funded pre-kindergarten and traditional center-based childcare complicated. If universal pre-kindergarten is thought to be a way of providing higher quality care for children, researchers should have clear comparisons between community and universal programs

to ensure the quality of care provided is higher in universal programs than in the community at large.

Many of the state-funded pre-kindergarten programs require childcare providers to have a minimum level of education; many states, especially those which have programs situated in public schools, require a bachelor's degree. Universal pre-kindergarten may be a way to raise the quality of care and provide access to quality care for all children. However, it is important for state policy makers to consider relevant research when establishing guidelines and requirements for these programs. No relation was found in this study or in the recent meta-analyses between education and quality. Requirements for childcare provider education in universal pre-kindergarten should be considered carefully in light of these findings. Incorporating other aspects of quality child care is critical for all early childhood programs including pre-kindergarten classrooms.

According to researchers, childcare quality is lowest in middle-class, blue collar neighborhoods and higher in poor and upper-class neighborhoods (Fuller, et. al., 2004). Although the same curvilinear relationship was not found, this study did document that higher poverty was related to higher quality. This is a particularly notable finding given that high quality care has been found to be beneficial for children at-risk (Burchinal, Roberts, Nabors & Bryant, 1996; Caughy, DiPeietro, & Strobino; Peisner-Feinberg & Burchinal, 1997). Children who live in poverty are much less likely to receive adequate schooling later in life and are more at-risk for school failure than children who do not live in poverty (Amatea & West-Olatunji, 2007). Providing children with high quality childcare early in life may better prepare them for formal schooling, which may improve their long-term academic outcomes as well.

In light of this research, in combination with previous literature, the quality of care provided in blue collar neighborhoods should be addressed. It is possible that in high poverty areas, childcare programs have access to funding which can translate into better resources and better quality. Childcare centers in "working poor" neighborhoods, which may not qualify for public funding and may lack resources, may be in need of additional support in order to provide quality care. Further, programs need to be designed to support childcare in middle class neighborhoods and the families within these neighborhoods. Universal state-funded pre-kindergarten programs would be beneficial in this regard. All programs funded through the state would have access to similar resources, which could possibly raise the quality of care provided for middle class neighborhoods and families.

Conclusions

The purpose of this study was to examine the impact of childcare provider education and neighborhood poverty on childcare quality. In light of the extensive research which demonstrates that high quality care is beneficial for children, especially those at-risk, understanding what contributes to the quality of the classroom environment is essential. Guided by an ecological framework, this study examined how features from the microsysytem (i.e., childcare provider education) and the exosystem (i.e., neighborhood poverty) influenced classroom quality. Consistent with other research, the results of this study have highlighted the complexity of the childcare quality issue.

This study revealed that childcare providers' education alone may not directly impact classroom quality, but that neighborhood poverty is linked with the quality of the classroom. Although the quality of childcare in this study was generally low, childcare in high poverty neighborhoods was of higher quality than in low poverty neighborhoods. As

previous researchers have demonstrated, it is possible that children in these high poverty areas may be benefiting from higher quality childcare (Burchinal, Roberts, Nabors & Bryant, 1996; Caughy, DiPeietro, & Strobino, 1994; Peisner-Feinberg & Burchinal, 1997). Despite the lack of findings regarding the link between childcare provider education and childcare quality, current political and empirical interest in this question argues for a consideration of childcare provider education in context with other variables. Although an interaction of education and neighborhood poverty was not found, this study represented a preliminary attempt to examine the issue more broadly. In the future researchers should strive to examine the role of the childcare provider in the classroom from a truly ecological perspective and consider the multiple influences of proximal and distal factors on classroom quality.

TABLES

Table 1

Childcare Providers' Ethnic and Educational Background

Ethnic Background* Surveyed	Percentage of Childcare providers
Black/ African American	50.7
Hispanic, Latino/a, Chicano/a	17.9
White, Caucasian	24.6
Asian, Asian-American	4.5
Other	1.2
Educational Background	
Some High School or Less	3.5
High School/ GED	29.8
CDA Credential	22.2
Associates Degree	23.4
Bachelor's Degree	18.7
Master's Degree	2.3
Currently working towards a degree**	51.2
Committed to remaining in the childcare Field in the next 3 years***	
Yes	77.5
No	3.6
Don't Know	18.8

Note. * Ethnic background is based on 134 childcare providers surveyed. The remaining 37 childcare providers declined to answer the ethnicity question of the childcare provider interview.
**Information on providers currently working on a degree is based on 129 participants. The remaining 42 providers did not provide a response to this question.
*** Information on providers' commitment to remaining in the field over the next 3 years is based on 138 participants. The remaining 33 providers did not provide a response to this question.

Table 2
Descriptive Statistics for Classroom Data

	Mean (SD)	Minimum	Maximum
Classroom Data			
Number of Children Enrolled	11.65 (4.06)	4	21
Number of Children Present	9.62 (3.80)	3	21
Staff: child Ratio Enrolled	.21 (.12)	.07	1.00
Staff: child Ratio Present	.26 (.15)	.10	1.00
Number of staff Present	2.22 (.82)	1	6
Total ERS Scores	3.93 (.73)	2.00	5.85
ECERS-R Scores*	3.94 (.71)	2.00	5.63
ITERS Scores*	3.93 (.77)	2.56	5.85

Note. * ECERS-R mean scores were based on 106 early childhood classrooms, while ITERS mean scores were based on 65 infant/toddler classrooms.

Table 3
Descriptive Statistics for Infant/ Toddler Classroom Data (N =65)

	Mean (SD)	Minimum	Maximum
Classroom Data			
Number of Children Enrolled	9.21 (3.38)	4	18
Number of Children Present	7.49 (3.34)	3	16
Staff: child Ratio Enrolled	.28 (.14)	.11	1.00
Staff: child Ratio Present	.36 (.18)	.14	1.00
Number of staff Present	2.42(1.01)	1	6

Table 4
Descriptive Statistics for Early Childhood Classroom Data (N= 105)

	Mean (SD)	Minimum	Maximum
Classroom Data			
Number of Children Enrolled	13.16 (3.71)	5	21
Number of Children Present	10.90 (3.49)	4	21
Staff: child Ratio Enrolled	.17 (.06)	.07	.43
Staff: child Ratio Present	.21 (.08)	.10	.50
Number of staff Present	2.10 (.64)	1	4

Table 5

Descriptive Statistics for Neighborhood Data

	Mean (SD)	Minimum	Maximum
Neighborhood Total Population	968 (626.92)	104	2640
Neighborhood Percent Below Poverty	32.5 (21.4)	1	100

Table 6

Correlation Table of Childcare Provider Education, Neighborhood Poverty, and Combined ERS Total

	(1)	(2)	(3)
Childcare provider Education (1)	--		
Neighborhood Poverty (2)	.02	--	
Total ERS Score (3)	.13	.16*	--

Note. $p < .05$

Table 7

Correlation Table of Childcare Provider Education, Neighborhood Poverty, and ECERS - R Total and Subscales

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Childcare Provider Education (1)	--									
Neighborhood Poverty (2)	.02	--								
Total ECERS Score (3)	.17	.12	--							
ECERS Subscale 1 (4)	.27**	.02	.76**	--						
ECERS Subscale 2 (5)	.06	.15	.69**	.41**	--					
ECERS Subscale 3 (6)	.16	.00	.75**	.55**	.43**	--				
ECERS Subscale 4 (7)	.21*	.11	.82**	.59**	.38**	.56**	--			
ECERS Subscale 5 (8)	-.02	-.04	.68**	.33**	.57**	.64**	.33**	--		
ECERS Subscale 6 (9)	-.05	.04	.70**	.47**	.30**	.50**	.56**	.46**	--	
ECERS Subscale 7 (10)	.15	.33**	.67**	.45**	.33**	.37**	.62**	.22**	.47**	--

Note. * $p < .05$, ** $p < .01$

Table 8

Correlation Table of Childcare Provider Education, Neighborhood Poverty, and ITERS Total and Subscales

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Childcare Provider Education (1)	--									
Neighborhood Poverty (2)	.02	--								
Total ITERS Score (3)	.06	.21	--							
ITERS Subscale 1 (4)	.26*	.05	.66**	--						
ITERS Subscale 2 (5)	-.16	.12	.85**	.40**	--					
ITERS Subscale 3 (6)	.22	.11	.75**	.48**	.53**	--				
ITERS Subscale 4 (7)	.22	.24+	.77**	.52**	.48**	.72**	--			
ITERS Subscale 5 (8)	-.09	.09	.64**	.32**	.49**	.47**	.29*	--		
ITERS Subscale 6 (9)	-.02	.11	.73**	.36**	.56**	.54**	.44**	.61**	--	
ITERS Subscale 7 (10)	.07	.32**	.52**	.31*	.46**	.17	.25*	.28*	.25*	--

Note. * $p < .05$, ** $p < .01$, + $p < .10$

Table 9

Mean Differences Between Level of Education and Overall Classroom Quality (N = 171)

	ERS Total Score M(SD)
High School Diploma Or less[a]	3.69(.73)
AA/ CDA[b]	4.15(.70)
BA and Higher[c]	3.85(.67)

Note. ** = $p < .001$, * $p < .01$

[a] n = 57

[b] n = 78

[c] n = 36

Table 10

Partitioning Variance in Classroom Quality: Fully Unconditional HLM Model (N = 171 Childcare Providers in 32 schools)

Variance between neighborhoods (tau)	.299
Between- neighborhood standard deviation	.547
Variance within neighborhoods, pooled across neighborhoods (sigma-squared)	.235
Estimated HLM reliability (lambda)	.857
Proportion of variability between neighborhoods (Intraclass correlation; ICC)	.560[a]

Note. [a] The intraclass correlation is computed as follows: tau/ (tau + sigma squared)

Table 11

Within-Neighborhood Hierarchical Model for Effects of Childcare Provider Education on Classroom Quality (N = 171 Childcare providers Within 32 Neighborhoods)

		Estimated Effects		
Independent Variables	Beta Coefficient	Standard Error	t value	Effect Size[a]
Intercept(β_0)	3.92***	.11	36.01	
Childcare provider education(β_1)	0 .01	.04	0.35	.02
ERS(β_2)	-0.06	.08	-0.69	-.10

Random Parameter	Estimated Parameter Variance	Degrees of Freedom	Chi-Square Statistic
Intercept	.548	29	228.61***
Highest Education	.001	29	19.96

Note. *** $p < .001$

[a] Effect sizes are computed by dividing each beta coefficient by the between neighborhood standard deviation of the outcome estimated in the fully unconditional model.

Table 12

Between-Neighborhood Hierarchical Model for Classroom Quality (N = 171 Childcare Providers in 32 Centers)

		Estimated Effects		
Independent Variables	Gamma Coefficient	Standard Error	t value	Effect Size[a]
Neighborhood Mean Classroom Quality				
Intercept(Γ_{00})	3.66***	.19	19.46	
Percent Poverty	0 .83+	.48	1.73	1.52
Childcare provider Education Slope				
Intercept(Γ_{10})	-0.25	.23	-1.08	
Neighborhood Mean Education	0.07	.07	1.12	.13
Poverty	0.01	.14	0.10	.03
Classroom Type Slope				
Intercept(Γ_{20})	-0.06	.08	-0.78	-.11

Random Parameter	Estimated Parameter Variance	Degrees of Freedom	Chi-Square Statistic
Neighborhood Mean Quality	.283	28	223.91***
Highest Education	.001	27	19.10

Note. *** $p < .001$, + $p < .10$

[a] Effect sizes are computed by dividing each beta coefficient by the between neighborhood standard deviation of the outcome estimated in the fully unconditional model.

Table 13

Summary of Hierarchical Regression Analysis for Variables Predicting Space and Furnishings Quality

	Model 1			Model 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*B*
Type of classroom	-.45	.13	-.25*	-.39	.13	-.22*
Childcare provider education				.18	.05	.26**
Adjusted R^2		.06			.12	
F for change in R^2		11.69**			3.41**	

Note. * $p<.05$, ** $p < .001$

Table 14

Summary of Hierarchical Regression Analysis for Variables Predicting Activities Quality

	Model 1		
Variable	*B*	*SE B*	*β*
Childcare Provider Education	.14	.07	.21
Neighborhood Poverty	.37	.38	.10
Adjusted R^2	.04		
F for change in R^2	2.89		

FIGURES

Figure 1. Conceptual depiction of Social Disorganization Theory as adapted by Sampson (1992) linked with Bronfenbrenner's Ecological Theory.

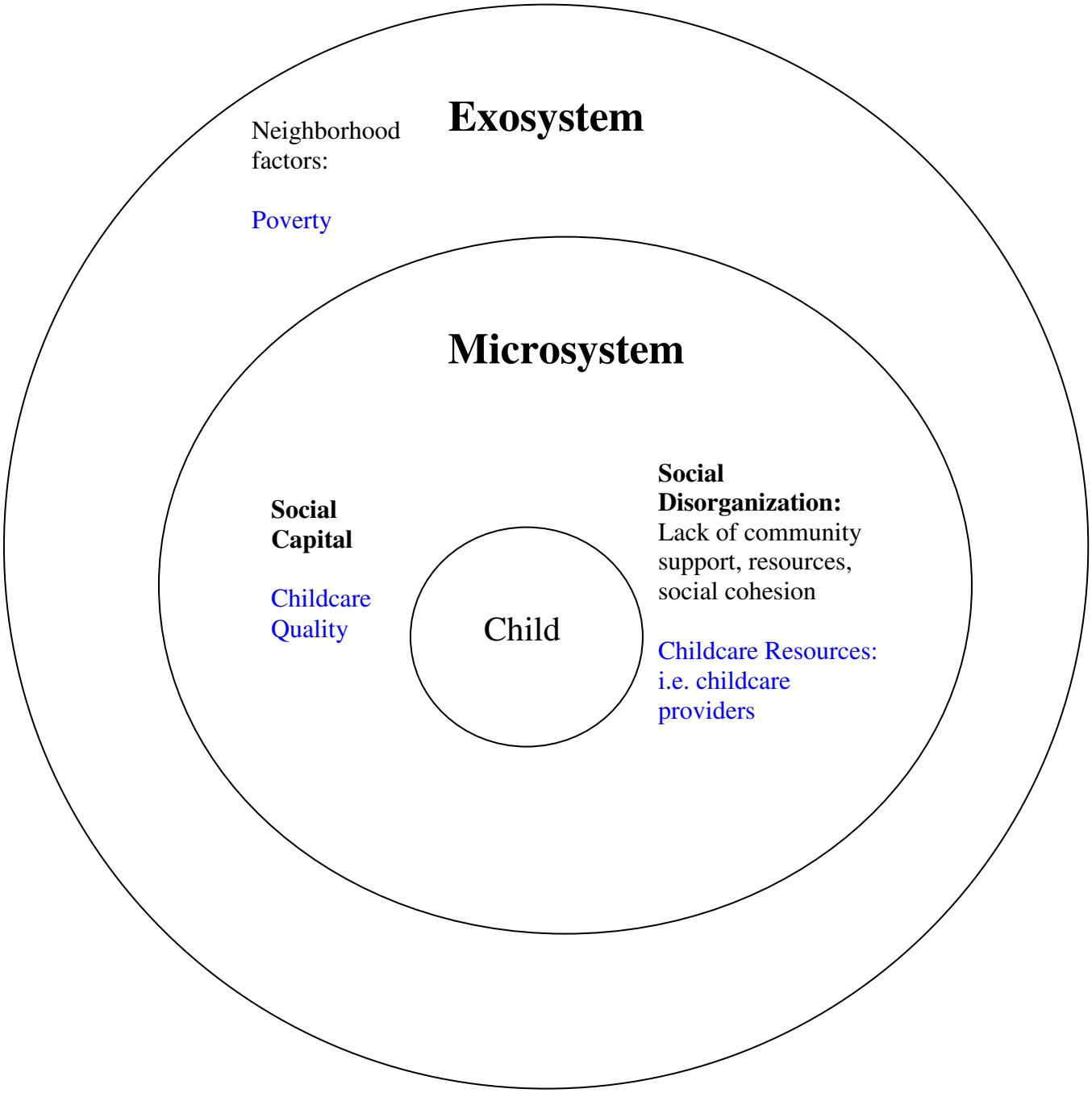
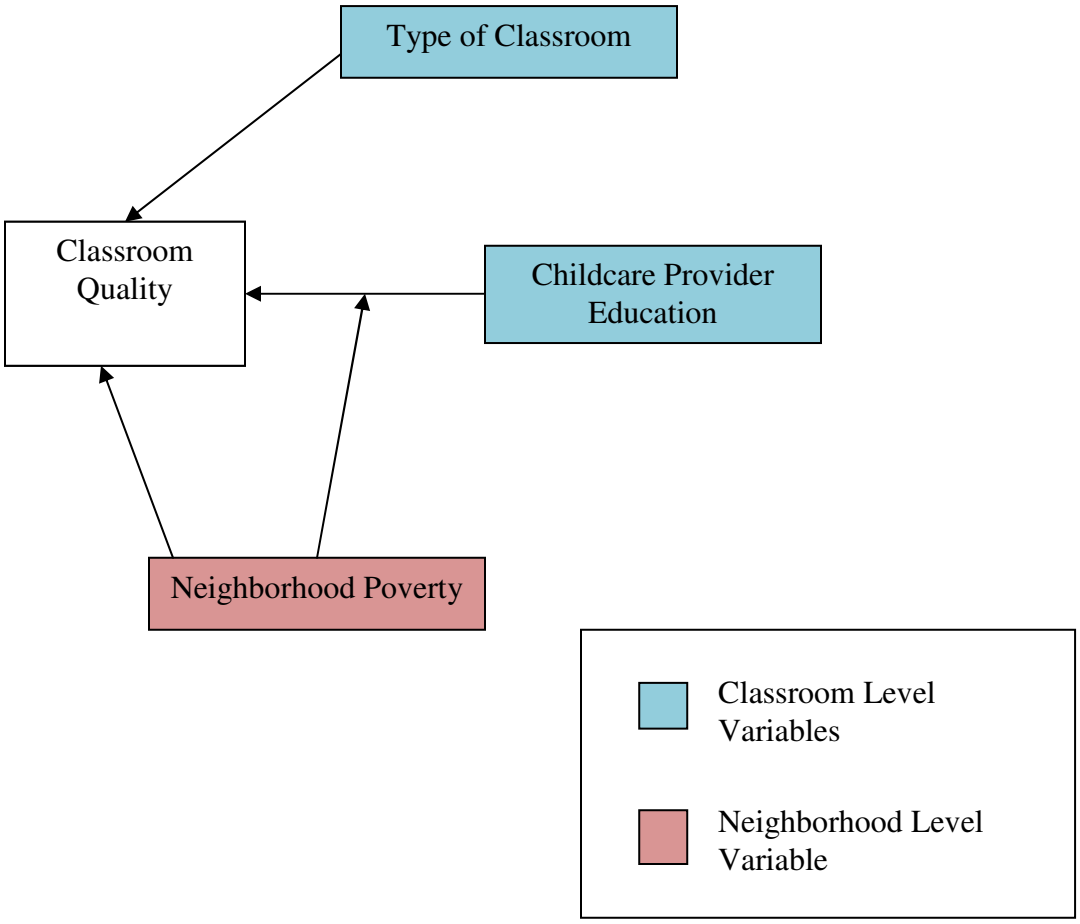


Figure 2. Multilevel heuristic model for evaluating the effects of childcare provider education and neighborhood poverty on childcare classroom quality.



Appendices

APPENDIX A

Childcare Provider Education Survey

Please tell us a little bit about yourself.

1. How many paid hours a week do you now work in early care and education?
_____ hours

2. On average, how many hours per week do you work on activities related to early care and education **beyond** your paid hours? _____ hours

3. How would you best describe your ethnicity?

____ *Black, African American* ____ *White, Caucasian*

____ *Hispanic, Latino/a, Chicano/a* ____ *Asian, Asian American*

____ *Native American* ____ *Biracial or Multicultural*

____ Other: _____

4. What are the ages of children in your classroom?
(Please check **ONE** response that best describes your class. If your classroom serves children from more than one category equally, please check the mixed option and specify your classrooms age ranges.)

____ 6 weeks - 12 months

____ 13 - 24 months

____ 25 - 36 months

____ 37 - 48 months

____ 49 - 60 months

____ Mixed (specify ages)_____

*5a. What is the highest education level that you have **completed**?*

_____ *Some high school or less*

_____ *High School/GED*

_____ *CDA Credential*

_____ *Associate's Degree; area of concentration:* _____

_____ *Bachelor's Degree; area of concentration:* _____

_____ *Master's Degree; area of concentration:* _____

_____ *Post Master's Work; area of concentration:* _____

_____ *Other:* _____

5b. Are you currently working towards a degree? _____ *No* _____ *Yes*

If yes, which degree?

_____ *High School/GED*

_____ *CDA Credential*

_____ *Associate's Degree; area of concentration:* _____

_____ *Bachelor's Degree; area of concentration:* _____

_____ *Master's Degree; area of concentration:* _____

_____ *Post Master's Work; area of concentration:* _____

_____ *Other:* _____

6. Do you expect to be working in the early childhood education field three years from now?

   _____ Yes _____ No _____ Don't know

   If no, why not? _____

APPENDIX B

ECERS-R Score Sheet

hours of operation: _____

Revised by SJU Child Development Laboratory

SCORE SHEET
Early Childhood Environment Rating Scale–Revised

Thelma Harms, Richard M. Clifford, and Debby Cryer

Observer: _____ Observer Code: ___ ___ ___

Center/School: _____ Center Code: ___ ___ ___

Room: _____ Room Code: ___ ___

Teacher(s) Lead _____ Teacher Code: ___ ___

Number of staff present: ___ ___

Number of children enrolled in class: ___ ___

Number of children present: ___ ___

Date of observation: ___ ___ / ___ ___ / ___ ___ (m m d d y y)

Number of children with identified disabilities: ___ ___

Check type(s) of disability: ☐ physical/sensory ☐ cognitive/language ☐ social/emotional ☐ other: _____

Birthdates of children enrolled: youngest ___ ___ / ___ ___ / ___ ___

oldest ___ ___ / ___ ___ / ___ ___ (m m d d y y)

arrival time ___ : ___ ☐AM ☐ PM

departure time ___ : ___ ☐AM ☐ PM

SPACE AND FURNISHINGS

1. Indoor space

1 2 3 4 5 6 7 Notes

Y	N		Y	N	NA		Y	N		Y	N
1.1	☐	☐	3.1	☐	☐		5.1	☐	☐	7.1	☐ ☐
1.2	☐	☐	3.2	☐	☐		5.2	☐	☐	7.2	☐ ☐
1.3	☐	☐	3.3	☐	☐		5.3	☐	☐		
1.4	☐	☐	3.4	☐	☐						
			3.5	☐	☐	☐					

2. Furniture for care, play, & learning

1 2 3 4 5 6 7 75% Feet Touch Floor?

Y	N		Y	N	NA		Y	N		Y	N
1.1	☐	☐	3.1	☐	☐		5.1	☐	☐	7.1	☐ ☐
1.2	☐	☐	3.2	☐	☐		5.2	☐	☐	7.2	☐ ☐
			3.3	☐	☐	☐	5.3	☐	☐		

3. Furnishings for relaxation

1 2 3 4 5 6 7

Y	N		Y	N		Y	N		Y	N
1.1	☐	☐	3.1	☐	☐	5.1	☐	☐	7.1	☐ ☐
1.2	☐	☐	3.2	☐	☐	5.2	☐	☐	7.2	☐ ☐
						5.3	☐	☐		

	NO	SOME
soft furnishings		
soft toys		

4. Room arrangement

1 2 3 4 5 6 7 List Interest Centers

Y	N		Y	N	NA		Y	N		Y	N
1.1	☐	☐	3.1	☐	☐		5.1	☐	☐	7.1	☐ ☐
1.2	☐	☐	3.2	☐	☐		5.2	☐	☐	7.2	☐ ☐
			3.3	☐	☐		5.3	☐	☐	7.3	☐ ☐
			3.4	☐	☐	☐					

5 Space for privacy 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
	3.2 □ □	5.2 □ □	7.2 □ □

Substantial Portion of Day

6 Child-related display 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
		5.3 □ □	

7 Space for gross motor 1 2 3 4 5 6 7 Notes:

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
		5.3 □ □	7.3 □ □

8. Gross motor equipment 1 2 3 4 5 6 7

Y N	Y N	Y N NA	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
1.3 □ □	3.3 □ □	5.3 □ □ □	

Variety of Skills	
Balancing	
Climbing	
Ball play	
Steering toys	
Pedaling toys	
Sliding	
Running	

A. Subscale (Items 1 - 8) Score ___

B. Number of items scored ___

SPACE AND FURNISHINGS Average Score (A ÷ B) __.__

PERSONAL CARE ROUTINES

9. Greeting/departing 1 2 3 4 5 6 7 Notes:

Y N	Y N	Y N NA	Y N NA
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
1.3 □ □	3.3 □ □	5.3 □ □ □	7.3 □ □ □

Key:
√ = Greeted
+ = Warmly
X = Not greeted

P	C	W/name

10. Meals/snacks 1 2 3 4 5 6 7

Y N NA	Y N NA	Y N NA	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
1.3 □ □	3.3 □ □	5.3 □ □	7.3 □ □
1.4 □ □	3.4 □ □	5.4 □ □ □	
1.5 □ □ □	3.5 □ □ □		
	3.6 □ □ □		

√ = yes
X = no

Hand washing

Staff	Child

Meal components
Breakfast:

Snack:

Lunch:

11. Nap/rest

1 2 3 4 5 6 7 NA

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
1.3 □ □	3.3 □ □	5.3 □ □	
	3.4 □ □		

12. Toileting/diapering

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
1.3 □ □	3.3 □ □	5.3 □ □	
1.4 □ □	3.4 □ □		
	3.5 □ □		

√ = yes
X = no

Hand washing

Staff	Child

13. Health practices

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □ □
	3.3 □ □	5.3 □ □	
	3.4 □ □		

√ = yes
X = no

Hand washing

Staff	Child

14 ety practices

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
1.3 □ □	3.3 □ □		

Indoor Problems:

Outdoor Probles:

A. Subscale (Items 9 - 14) Score ___ ___

B. Number of items scored ___ ___

PERSONAL CARE ROUTINES Average Score (A ÷ B) ___.___ ___

LANGUAGE-REASONING

15. Books & pictures

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
		5.3 □ □	
		5.4 □ □	
		5.5 □ □	

Notes:

Categories:

Fantasy	
Fact	
People	
Animals	
Science	
Diversity	

Substantial Portion of Day

16. Encouraging children to communicate

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
	3.3 □ □		

Materials for communication In centers:

17. Using language to develop reasoning skills

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □

18. Informal use of language

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
1.3 □ □		5.3 □ □	
		5.4 □ □	

A. Subscale (Items 15 - 18) Score ___

B. Number of items sco ___

LANGUAGE-REASONING Average Score (A ÷ B)

ACTIVITIES

19. Fine Motor

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
		5.3 □ □	

Notes:

	Some	Many
Small bldg.		
Art		
Manipulative		
Puzzles		

Substantial Portion of Day

20. Art

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
			7.3 □ □ □

Drawing	
Paint	
3-D	
Collage	
Tools	

Substantial Portion of Day

21 Music/movement

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
	3.3 □ □		7.3 □ □

Instruments Activities Types music

22. Blocks

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
	3.2 □ □	5.2 □ □	7.2 □ □
	3.3 □ □	5.3 □ □	7.3 □ □
		5.4 □ □	

Blocks Accessories Space

Substantial Portion of Day

23. Sand/water

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
		5.3 □ □	

List Accessories:

24. Dramatic play

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
	3.2 □ □	5.2 □ □	7.2 □ □
	3.3 □ □	5.3 □ □	7.3 □ □
		5.4 □ □	7.4 □ □

Notes:

Gender Specific?

List Themes:

25. Nature/science

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
	3.2 □ □	5.2 □ □	7.2 □ □
	3.3 □ □	5.3 □ □	
		5.4 □ □	

Collections
Living
Books
Games/toys
Experiments

Substantial Portion of

26. Math/number

1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □
1.2 □ □	3.2 □ □	5.2 □ □	7.2 □ □
		5.3 □ □	
		5.4 □ □	

Substantial Portion of

27. Use of TV, video, and/or computers

1 2 3 4 5 6 7 NA

Y N	Y N	Y N NA	Y N NA
1.1 □ □	3.1 □ □	5.1 □ □	7.1 □ □ □
1.2 □ □	3.2 □ □	5.2 □ □ □	7.2 □ □
	3.3 □ □	5.3 □ □	
		5.4 □ □	

28. Promoting acceptance of diversity | 1 2 3 4 5 6 7

Y	N		Y	N		Y	N		Y	N
1.1	□	□	3.1	□	□	5.1	□	□	7.1	□ □
1.2	□	□	3.2	□	□	5.2	□	□	7.2	□ □
1.3	□	□	3.3	□	□					

30. General supervision of children | 1 2 3 4 5 6 7

Y	N		Y	N		Y	N		Y	N
1.1	□	□	3.1	□	□	5.1	□	□	7.1	□ □
1.2	□	□	3.2	□	□	5.2	□	□	7.2	□ □
			3.3	□	□	5.3	□	□		
						5.4	□	□		

A. Subscale (Items 19 - 28) Score ___

B. Number of items scored ___

ACTIVITIES Average Score (A ÷ B) ___

31. Discipline | 1 2 3 4 5 6 7

Y	N		Y	N		Y	N		Y	N
1.1	□	□	3.1	□	□	5.1	□	□	7.1	□ □
1.2	□	□	3.2	□	□	5.2	□	□	7.2	□ □
1.3	□	□	3.3	□	□	5.3	□	□	7.3	□ □

INTERACTION

29. Supervision of gross motor activities | 1 2 3 4 5 6 7

Notes:

Y	N		Y	N		Y	N		Y	N
1.1	□	□	3.1	□	□	5.1	□	□	7.1	□ □
1.2	□	□	3.2	□	□	5.2	□	□	7.2	□ □
						5.3	□	□	7.3	□ □

32. Staff-child interactions | 1 2 3 4 5 6 7

Y	N		Y	N		Y	N		Y	N
1.1	□	□	3.1	□	□	5.1	□	□	7.1	□ □
1.2	□	□	3.2	□	□	5.2	□	□	7.2	□ □
1.3	□	□				5.3	□	□		

33. Interactions among children 1 2 3 4 5 6 7 Notes

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
1.3 ☐ ☐	3.3 ☐ ☐		

A. Subscale (Items 29–33) Score __ __

B. Number of items scored: __ __

INTERACTION Average Score (A ÷ B) __.__ __

PROGRAM STRUCTURE

34. Schedule 1 2 3 4 5 6 7 Notes

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	
	3.4 ☐ ☐	5.4 ☐ ☐	

35. Free play 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	

Substantial Portion of Day

36. Group time 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
		5.3 ☐ ☐	7.3 ☐ ☐

37. Provisions for children with disabilities 1 2 3 4 5 6 7 NA Notes

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
1.3 ☐ ☐	3.3 ☐ ☐	5.3 ☐ ☐	7.3 ☐ ☐
1.4 ☐ ☐	3.4 ☐ ☐		

A. Subscale (Items 34–37) Score __ __

B. Number of items scored: __ __

PARENTS AND STAFF

38. Provisions for parents 1 2 3 4 5 6 7 Notes

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	7.3 ☐ ☐
	3.4 ☐ ☐	5.4 ☐ ☐	

39. Provisions for personal needs of staff 1 2 3 4 5 6 7

Y N	Y N NA	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	7.3 ☐ ☐
	3.4 ☐ ☐	5.4 ☐ ☐	
	3.5 ☐ ☐ ☐		

40. Provisions for professional needs of staff 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
1.3 ☐ ☐	3.3 ☐ ☐	5.3 ☐ ☐	

41. Staff interaction and cooperation 1 2 3 4 5 6 7 NA Notes

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
1.3 ☐ ☐	3.3 ☐ ☐	5.3 ☐ ☐	7.3 ☐ ☐

42. Supervision and evaluation of staff 1 2 3 4 5 6 7 NA

Y N	Y N	Y N NA	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
		5.3 ☐ ☐	7.3 ☐ ☐
		5.4 ☐ ☐ ☐	

43. Opportunities for professional growth 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	7.3 ☐ ☐ ☐
		5.4 ☐ ☐	

A. bscale (Items 38–43) Score ___ ___

B. Number of items scored: ___ ___

Total and Average Scores

	Total Score	# of Items Scored	Average Score
Space & Furnishings			
Personal Care			
Language-Reasoning			
Activities			
Interaction			
Program Structure			
Parents & Staff			
TOTAL			

APPENDIX C

ITERS Score Sheet

Scoresheet

Infant / Toddler Environment Rating Scale

Thelma Harms, Debby Cryer, and Richard, M. Clifford (2000)

Observer: _____ Observer Code: ___ ___ ___

Center/School: _____ Center Code: ___ ___ ___

Room: _____ Room Code: ___ ___

Teacher(s): _____ Teacher Code: ___ ___

Number of Staff present:: ___ ___

Number of children enrolled in class: ___ ___

Number of children present: ___ ___

Date of Observation: ___ ___ / ___ ___ / ___ ___ (m m d d y y)

Number of children with identified disabilities: ___ ___

Check type(s) of disability: ☐ physical/sensory ☐ cognitive/language ☐ social/emotional ☐ other: _____

Birthdates of children enrolled: youngest ___ ___ / ___ ___ / ___ ___ (m m d d y y)

oldest ___ ___ / ___ ___ / ___ ___ (m m d d y y)

Time observation began: ___ ___ : ___ ___ ☐ AM ☐ PM

Time observation ended: ___ ___ : ___ ___ ☐ AM ☐ PM

SPACE AND FURNISHINGS

1. Furnishings for routine care 1 2 3 4 5 6 7 — **Notes:**

Y N	Y N NA	Y N NA	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
	3.3 ☐☐☐	5.3 ☐☐☐	7.3 ☐☐☐
		5.4 ☐☐	

2. Use of furnishings for learning activities 1 2 3 4 5 6 7

Y N	Y N NA	Y N	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
	3.3 ☐☐☐	5.3 ☐☐	7.3 ☐☐☐
	3.4 ☐☐		

3. Furnishings for relaxation and comfort 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐☐
		5.3 ☐☐	7.3 ☐☐

4. Room arrangement 1 2 3 4 5 6 7 — **Notes:**

Y N	Y N	Y N NA	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐☐	7.2 ☐☐
	3.3 ☐☐	5.3 ☐☐☐	7.3 ☐☐
	3.4 ☐☐		

5. Display 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐☐
	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
		5.3 ☐☐	7.3 ☐☐
			7.4 ☐☐

A. Subscale (Items 1 – 5) Score: ___ ___

B. Number of items scored: ___

FURNISHINGS & DISPLAY Average Score (A ÷ B): ___ . ___ ___

PERSONAL CARE ROUTINES

6. Greeting / departing 1 2 3 4 5 6 7 **Notes:**

Y N	Y N NA	Y N NA	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
1.3 ☐☐	3.3 ☐☐	5.3 ☐☐	
		5.4 ☐☐☐	

7. Meals / snacks 1 2 3 4 5 6 7

Y N	Y N NA	Y N NA	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
1.3 ☐☐	3.3 ☐☐	5.3 ☐☐☐	
1.4 ☐☐☐	3.4 ☐☐☐	5.4 ☐☐☐	
1.5 ☐☐	3.5 ☐☐	5.5 ☐☐	
	3.6 ☐☐☐		
	3.7 ☐☐		

8. Nap 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐☐	7.2 ☐☐
1.3 ☐☐	3.3 ☐☐	5.3 ☐☐	
	3.4 ☐☐		
	3.5 ☐☐		
	3.6 ☐☐		

9. Diapering / toileting 1 2 3 4 5 6 7

Y N	Y N	Y N NA	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐☐	7.2 ☐☐☐
1.3 ☐☐	3.3 ☐☐	5.3 ☐☐☐	7.3 ☐☐
	3.4 ☐☐	5.4 ☐☐	
	3.5 ☐☐	5.5 ☐☐☐	

10. Personal grooming 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐☐
	3.3 ☐☐	5.3 ☐☐	7.3 ☐☐☐

11. Health practice 1 2 3 4 5 6 7 **Notes:**

Y N	Y N	Y N NA	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐☐	7.2 ☐☐☐
1.3 ☐☐			7.3 ☐☐
1.4 ☐☐			

12. Health policy 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
1.3 ☐☐	3.3 ☐☐	5.3 ☐☐	
	3.4 ☐☐		

13. Safety practice 1 2 3 4 5 6 7

Y N	Y N NA	Y N NA	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐☐	
1.3 ☐☐	3.3 ☐☐		
	3.4 ☐☐		
	3.5 ☐☐		
	3.6 ☐☐☐		
	3.7 ☐☐		

14. Safety policy 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	
	3.3 ☐☐		
	3.4 ☐☐		

A. Subscale (Items 6 – 14) Score: ___ ___

B. Number of items scored: ___

PERSONAL CARE ROUTINES
Average Score (A ÷ B): ___ . ___ ___

REVISED 1/29/00

LISTENING AND TALKING

15. Informal use of language 1 2 3 4 5 6 7 **Notes:**

Y N	Y N	Y N	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐☐
	3.3 ☐☐	5.3 ☐☐	7.3 ☐☐
		5.4 ☐☐	7.4 ☐☐

Note: 3.1 must be "No" to get a score of 5 or higher

16. Books and pictures 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐☐
	3.3 ☐☐		

A. Subscale (Items 15 – 16) Score: ___ ___

B. Number of items scored: ___

LISTENING & TALKING
Average Score (A ÷ B): ___ . ___ ___

LEARNING ACTIVITIES

17. Eye-hand coordination 1 2 3 4 5 6 7 **Notes:**

Y N	Y N	Y N NA	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
	3.2 ☐☐	5.2 ☐☐☐	7.2 ☐☐

18. Active physical play 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
1.3 ☐☐	3.3 ☐☐	5.3 ☐☐	
		5.4 ☐☐	

19. Art 1 2 3 4 5 6 7 NA

Y N	Y N NA	Y N NA	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐☐	7.1 ☐☐☐
	3.2 ☐☐☐	5.2 ☐☐☐	7.2 ☐☐
	3.3 ☐☐	5.3 ☐☐	7.3 ☐☐
	3.4 ☐☐	5.4 ☐☐	
	3.5 ☐☐		

20. Music and movement 1 2 3 4 5 6 7 **Notes:**

Y N	Y N	Y N NA	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
or	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
1.2 ☐☐	3.3 ☐☐	5.3 ☐☐	
		5.4 ☐☐☐	

21. Blocks 1 2 3 4 5 6 7 NA

Y N	Y N	Y N NA	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐☐
	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
		5.3 ☐☐☐	7.3 ☐☐

22. Pretend play 1 2 3 4 5 6 7

Y N	Y N	Y N NA	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
	3.2 ☐☐	5.2 ☐☐☐	7.2 ☐☐
		5.3 ☐☐☐	7.3 ☐☐

23. Sand and water play 1 2 3 4 5 6 7 NA

Y N	Y N	Y N	Y N
1.1 ☐☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
	3.3 ☐☐		

24 Cultural awareness 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐

A. Subscale (Items 17 – 24) Score: ___ ___

B. Number of items scored: ___

LEARNING ACTIVITIES
Average Score (A ÷ B): ___ . ___ ___

INTERACTION

25. Peer interaction 1 2 3 4 5 6 7 **Notes:**

Y N	Y N NA	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐☐	5.2 ☐☐	7.2 ☐☐
	3.3 ☐☐		

26. Caregiver – child interaction 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
1.3 ☐☐	3.3 ☐☐	5.3 ☐☐	7.3 ☐☐
1.4 ☐☐	3.4 ☐☐	5.4 ☐☐	

27. Discipline 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
		5.3 ☐☐	7.3 ☐☐☐
		5.4 ☐☐	

A. Subscale (Items 25 – 27) Score: ___ ___

B. Number of items scored: ___

INTERACTION
Average Score (A ÷ B): ___ . ___ ___

PROGRAM STRUCTURE

28. Schedule of daily activities 1 2 3 4 5 6 7 **Notes:**

Y N	Y N	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
	3.3 ☐☐	5.3 ☐☐	
		5.4 ☐☐	

29. Supervision of daily activities 1 2 3 4 5 6 7 **Notes:**

Y N	Y N	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
	3.3 ☐☐	5.3 ☐☐	
		5.4 ☐☐	

30. Staff cooperation 1 2 3 4 5 6 7 NA

Y N	Y N	Y N NA	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐☐	7.2 ☐☐
1.3 ☐☐	3.3 ☐☐	5.3 ☐☐	7.3 ☐☐
		5.4 ☐☐	

31. Provisions for exceptional children 1 2 3 4 5 6 7 NA

Y N	Y N	Y N NA	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐☐	7.2 ☐☐
1.3 ☐☐		5.3 ☐☐	7.3 ☐☐

A. Subscale (Items 28 – 31) Score: ___ ___

B. Number of items scored: ___

PROGRAM STRUCTURE
Average Score (A ÷ B): ___ . ___ ___

ADULT NEEDS

32. Adult personal needs 1 2 3 4 5 6 7 **Notes:**

Y N	Y N	Y N	Y N
1.1 ☐☐	3.1 ☐☐	5.1 ☐☐	7.1 ☐☐
1.2 ☐☐	3.2 ☐☐	5.2 ☐☐	7.2 ☐☐
	3.3 ☐☐	5.3 ☐☐	7.3 ☐☐
	3.4 ☐☐	5.4 ☐☐	
	3.5 ☐☐	5.5 ☐☐	

33. Opportunities for professional growth

1 2 3 4 5 6 7

	Y	N
1.1	☐	☐
1.2	☐	☐
1.3	☐	☐
3.1	☐	☐
3.2	☐	☐
3.3	☐	☐
5.1	☐	☐
5.2	☐	☐
5.3	☐	☐
5.4	☐	☐
7.1	☐	☐
7.2	☐	☐
7.3	☐	☐
7.4	☐	☐

Notes:

34. Adult meeting area

1 2 3 4 5 6 7

	Y	N
1.1	☐	☐
3.1	☐	☐
3.2	☐	☐
5.1	☐	☐
5.2	☐	☐
5.3	☐	☐
7.1	☐	☐
7.2	☐	☐

35. Provisions for parents

1 2 3 4 5 6 7

	Y	N
1.1	☐	☐
1.2	☐	☐
3.1	☐	☐
3.2	☐	☐
3.3	☐	☐
5.1	☐	☐
5.2	☐	☐
5.3	☐	☐
5.4	☐	☐
7.1	☐	☐
7.2	☐	☐
7.3	☐	☐

A. Subscale (Items 32-35) Score: ___ ___

B. Number of items scored: ___

ADULT NEEDS
Average Score (A ÷ B): ___ . ___ ___

	Total Score	Number of Items Scored	Average Score
Furnishings and Display	_____	_____	_____
Personal Care Routines	_____	_____	_____
Listening and Talking	_____	_____	_____
Learning Activiites	_____	_____	_____
Interaction	_____	_____	_____
Program Structure	_____	_____	_____
Adult Needs	_____	_____	_____
TOTAL	___ ___ ___	___ ___	___ ___ ___

APPENDIX D

Letter of Permission

SJU SAINT JOSEPH'S UNIVERSITY

Spirit | Intellect | Purpose

Department of Psychology

Brenda Jones Harden, Ph.D.
Associate Professor
Department of Human Development
University of Maryland
3304 Benjamin Building
College Park, MD 20742

May 6, 2008

Dear Dr. Jones,

This letter is to confirm that Allison D'Amour Meisch has my permission to use the data from my evaluation of the *Early to Learn* program in Philadelphia.

If you have any questions or concerns, please do not hesitate to contact me at ejaeger@sju.edu or 610-660-3337.

Sincerely,

Elizabeth Jaeger, Ph.D.
Associate Professor of Psychology

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